Research Product 90-02

ARI-NTC Data Archive and Research Center Workshop Notebook

October 1989

Presidio of Monterey Field Unit
Training Research Laboratory

U.S. Army Research Institute for the Behavioral and Social Sciences

U.S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES

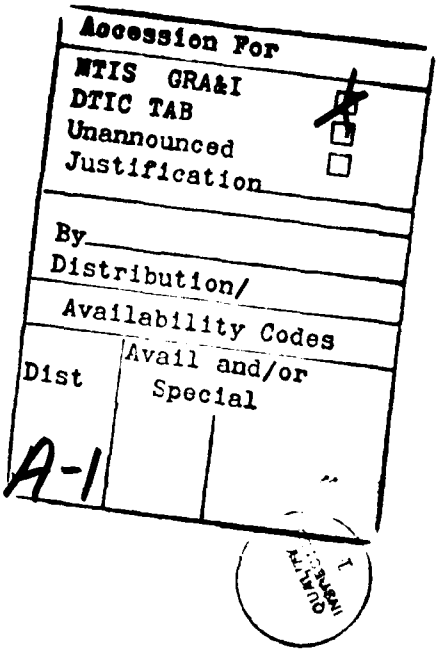
A Field Operating Agency Under the Jurisdiction of the Deputy Chief of Staff for Personnel

EDGAR M. JOHNSON
Technical Director

JON W. BLADES
COL, IN
Commanding

Technical review by

Randall M. Chambers
Kent E. Harrison (CALL)
Carol A. Johnson



NOTICES

DISTRIBUTION: Primary distribution of this report has been made by ARI. Please address correspondence concerning distribution of reports to: U.S. Army Research Institute for the Behavioral and Social Sciences, ATTN: PERI-POX, 5001 Eisenhower Ave., Alexandria, Virginia 22333-5600.

FINAL DISPOSITION: This report may be destroyed when it is no longer needed. Please do not return it to the U.S. Army Research Institute for the Behavioral and Social Sciences.

NOTE: The findings in this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Research Product 90-02

ARI-NTC Data Archive and Research Center Workshop Notebook

Dwight J. Goehring, Editor
U.S. Army Research Institute

Field Unit at Presidio of Monterey, California
Howard H. McFann, Chief

Training Research Laboratory
Jack H. Hiller, Director

U.S. Army Research Institute for the Behavioral and Social Sciences
5001 Eisenhower Avenue, Alexandria, Virginia 22333-5600

Office, Deputy Chief of Staff for Personnel
Department of the Army

October 1989

Army Project Number
2Q263007A794

Education and Training

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION Unclassified	1b. RESTRICTIVE MARKINGS --
2a. SECURITY CLASSIFICATION AUTHORITY --	3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution is unlimited.
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE --	
4. PERFORMING ORGANIZATION REPORT NUMBER(S) ARI Research Product 90-02	5. MONITORING ORGANIZATION REPORT NUMBER(S) --
6a. NAME OF PERFORMING ORGANIZATION U.S. Army Research Institute Field Unit at Presidio of Monterey 6b. OFFICE SYMBOL (If applicable) PERI-IO	7a. NAME OF MONITORING ORGANIZATION --
6c. ADDRESS (City, State, and ZIP Code) P.O. Box 5787 Presidio of Monterey, CA 93944-5011	7b. ADDRESS (City, State, and ZIP Code) --
8a. NAME OF FUNDING/SPONSORING ORGANIZATION U.S. Army Research Institute for the Behavioral and Social Sciences 8b. OFFICE SYMBOL (If applicable) PERI-I	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER --
8c. ADDRESS (City, State, and ZIP Code) 5001 Eisenhower Avenue Alexandria, VA 22333-5600	10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO.: 63007A PROJECT NO.: 794 TASK NO. (511): 3402 WORK UNIT ACCESSION NO.: H1

11. TITLE (Include Security Classification)
ARI-NTC Data Archive and Research Center Workshop Notebook

12. PERSONAL AUTHOR(S)
Goehring, Dwight J. (Editor)

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
Final	FROM 88/02 TO 89/05	1989, October	212

16. SUPPLEMENTARY NOTATION
--

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	National Training Center (NTC), Trend Line Analysis, Combat Training Centers (CTC), Lessons Learned

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

This product evolved from a series of 13 workshops jointly sponsored by the Combined Arms Training Activity/Center for Army Lessons Learned (CATA/CALL) and the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) and designed to exploit the National Training Center data archived at the U.S. Army Research Institute Field Unit at Monterey, CA, for identification of Army Lessons Learned and performance trends. More than 230 participants from Army Schools, Army Commands, contractors, and other interested organizations have attended the workshops. The workshops are now conducted periodically on a quarterly basis and will continue for the foreseeable future.

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT ☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT. ☐ DTIC USERS	21. ABSTRACT SECURITY CLASSIFICATION Unclassified
22a. NAME OF RESPONSIBLE INDIVIDUAL Howard H. McFann	22b. TELEPHONE (Include Area Code) (408) 647-5619 22c. OFFICE SYMBOL PERI-IO

DD Form 1473, JUN 86 *Previous editions are obsolete.* SECURITY CLASSIFICATION OF THIS PAGE
UNCLASSIFIED

FOREWORD

The primary mission of the National Training Center (NTC) at Fort Irwin, California, is to provide highly realistic training for Brigade and Battalion armor-heavy task forces of the U.S. Army. A secondary mission is to collect data in support of analysis and research. The Combined Arms Training Activity/Center for Army Lessons Learned (CATA/CALL), with the Army Schools and other organizations, is responsible for conducting the analysis of NTC-generated data.

The U.S. Army Research Institute Field Unit at Monterey, California supports CATA/CALL by both archiving NTC data and developing methods and analytical tools for exploiting it. In February 1988, Commander, Training and Doctrine Command (TRADOC), directed that a series of workshops be conducted to disseminate knowledge of the data archive and train analysts in its use. The initial workshop concept was briefed to and approved by Commander, CATA in March 1988. The Army Schools have presented their findings using the ARI-NTC data archive to Commander, TRADOC, in June 1988 and May 1989.

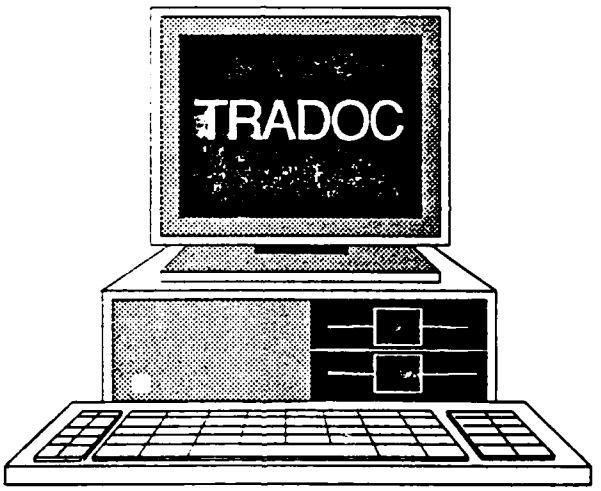
The NTC is one of four Combat Training Centers (CTCs). The Monterey Field Unit of ARI will support CATA/CALL by maintaining the archived data from all the CTCs. Periodic workshops, jointly sponsored by ARI and CATA/CALL, are conducted to promote the maximum benefit to the Army of these data.

EDGAR M. JOHNSON
Technical Director

ARI-NTC DATA ARCHIVE AND RESEARCH CENTER WORKSHOP NOTEBOOK

CONTENTS

ARI-NTC ARCHIVE & RESEARCH CENTER WORKSHOP NOTEBOOK



24-28 April 1989

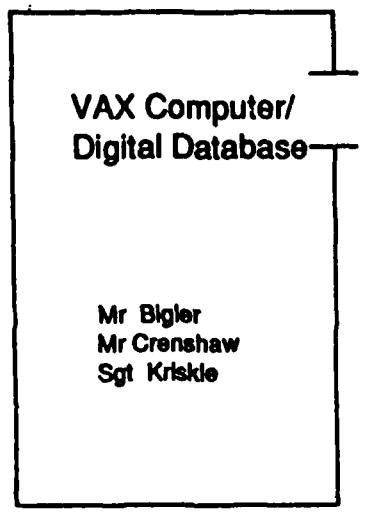
ARI-POM **CATA/CALL**

ARI-NTC ARCHIVE AND RESEARCH CENTER WORKSHOP

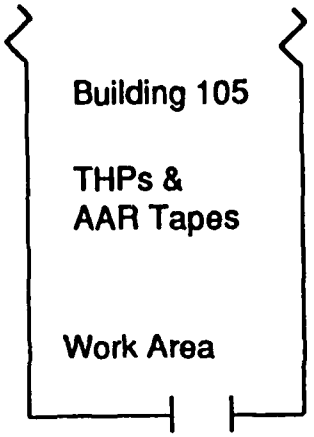
AGENDA

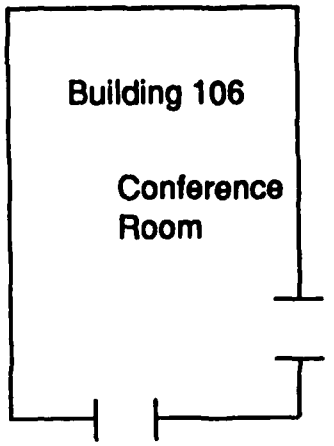
24-28 April 1989

DATE	ACTIVITY	POC
MONDAY		
08:00	Introduction Welcome Administrative Information Objectives/Overview Trendline Analysis Program and Data Security	 Dr. McFann, ARI SFC De La Rosa, ARI Dr. Goehring, ARI MAJ McLaughlin, CALL
09:00	NTC Orientation	MAJ Shadell, NTC
10:00	Non-digital Data Sources Take Home Packages, After Action Reviews	SFC De La Rosa, ARI Ms. Hamza, ARI
10:30	Maneuver Graphics	MAJ McLaughlin
11:00	JRTC Brief	(TBD)
TBD	Digital Database Introduction & Hands-on	Dr. Goehring MAJ McLaughlin Mr. Wilburn, TRAC
TBD	GNATT Demonstration (Room 6)	Dr. Goehring
TUESDAY-THURSDAY		
	(Exams due Tuesday morning)	
08:00	Explore Database and Conduct Research	As Necessary
FRIDAY		
08:00	Round-table Reports Distribution of Certificates	All Participants

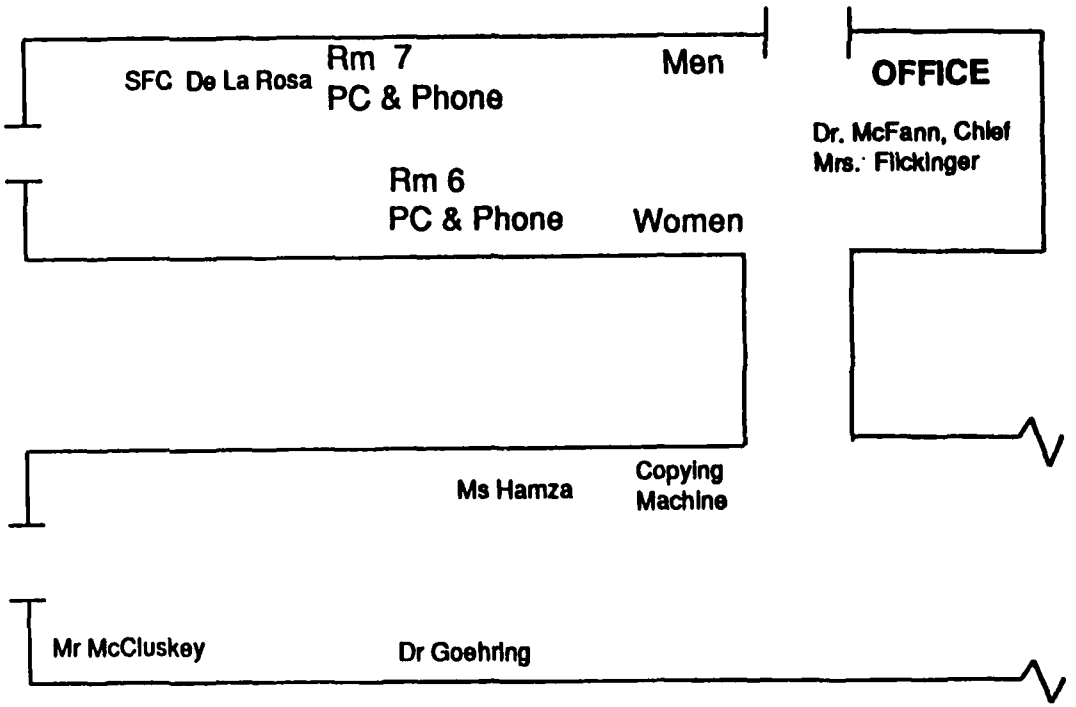


Building 110





Building 104



U.S. Army Research Institute
Presidio of Monterey Field Unit

April 1995
Not to Scale

North

ARI-NTC Archive & Research Center Workshop

Objectives and Overview

ARI–NTC Archive Workshop Goals

- Provide an understanding of archive components
- Provide skills needed to exploit the archive
- Provide the opportunity to conduct research

Workshop Objectives

- The observer/analyst will learn:
  - Archive organization and content
  - Procedure and policy for conducting research and disseminating results
  - Capabilities of the DeAnza replay stations
  - To develop Ingres queries of the digital database and to analyze outputs using SPSS
  - To analyze Take Home Packages
  - To analyze the audio and video components of the archive
  - The strengths and limitations of each type of information in the archive

Workshop Objectives (continued)

- The observer/analyst will be able to:
  - Identify and frame issues that can be addressed by the data in the archive
  - Identify additional types of data required from NTC to support critical issues
  - Conduct preliminary analyses supporting lead school specified issues and brief the results
  - Formulate a plan for future utilization of the archive and research center in support of issues

Course Organization

- Instructional methodology: Mastery learning
- Criterion-referenced evaluation: A test
- Approach
  - Minimal formal presentations
  - Extensive hands-on
  - Individual mentor/consultants
  - Certification

Overview of the ARI-NTC Archive data types

- Digital Data
  - Training exercise real-time data
  - Relational Data Base Management System
  - PC-based databases
- Non-digital Data
  - Video data
  - Audio communications data
  - Paper-based data

Training Exercise Real-time Data

- Two replay Workstations
  - High-resolution color graphic CRT
  - Control tablet
- Snapshot summary statistics

DIGITAL DATA

- Relational Data Base Management System (RDBMS)
  - Ingres RDBMS
  - Mission Data Bases for 300+ NTC missions
- PC-Based Databases
  - Lotus Spreadsheet Format
  - Direct Fires from THP
  - Indirect Fire from O/C Observations
  - General-purpose NTC Analysis of Training Tool (GNATT) to replay mission data

Additional Types of Data

- Video Data
  - After Action Reviews
  - Live Fire and other exercises
- Audio Communications Data
  - 40 channel tapes
  - Audio Workstation
- Paper Data
  - Take Home Packages
  - Operations Plan from NTC operations group

Data Security

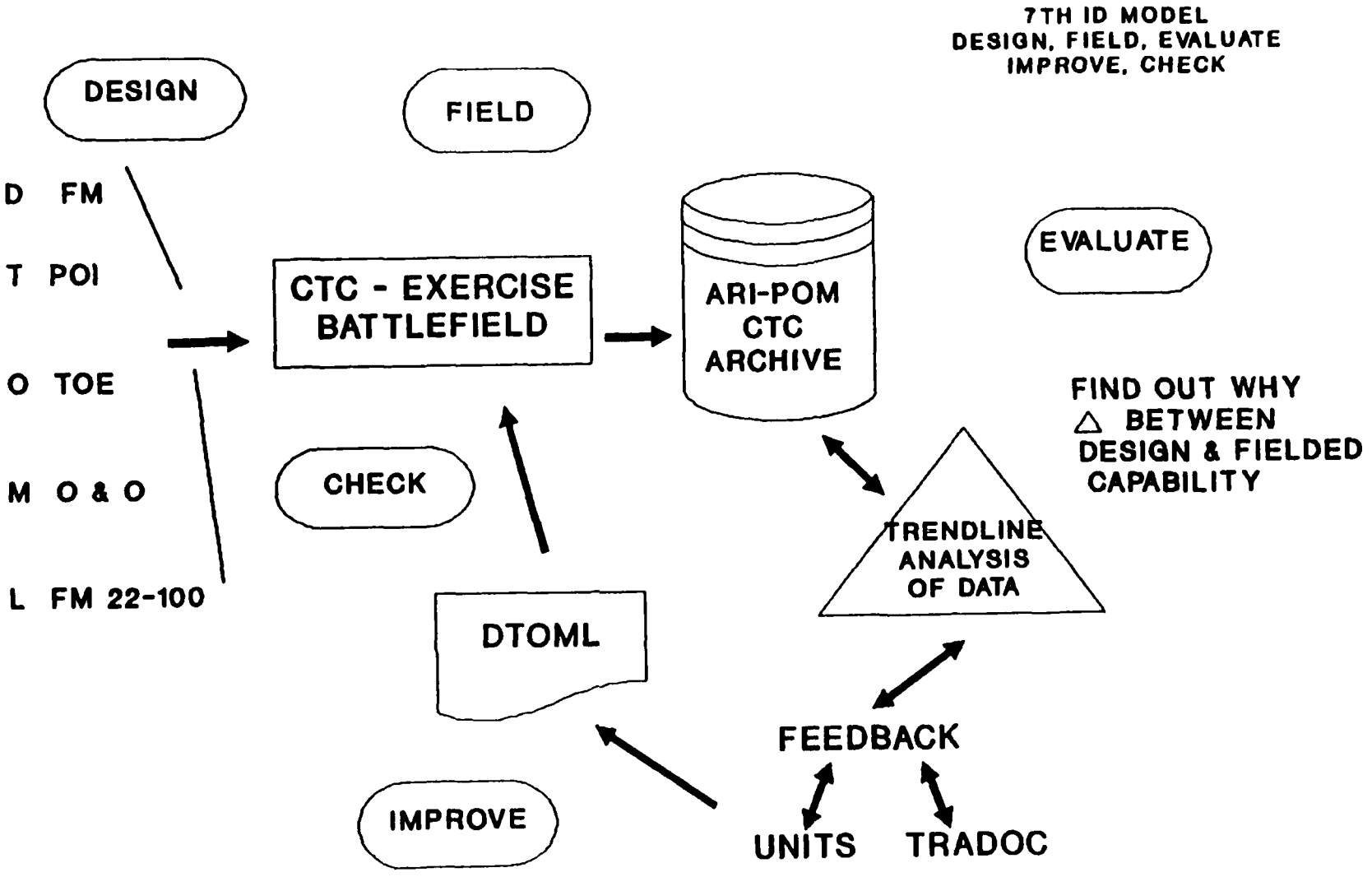
MAJ McLaughlin

CATA

TRENDLINE ANALYSIS PROGRAM

THE ARMY'S PROGRAM TO COLLECT, PROCESS, ANALYZE AND DISSEMINATE DATA PRODUCED AS A RESULT OF TRAINING AT THE FOUR COMBAT TRAINING CENTERS FOR THE PURPOSE OF PROVIDING INFORMATION TO IMPROVE DOCTRINE, TRAINING, ORGANIZATION, MATERIEL AND LEADERSHIP.

TRENDLINE ANALYSIS PROGRAM APPLICATION



TRENDLINE ANALYSIS PROGRAM RELATIONSHIPS

COLLECT

BATTLEFIELD EVENTS
TASK PERFORMANCE
OBSERVER COMMENTS

PROCESS

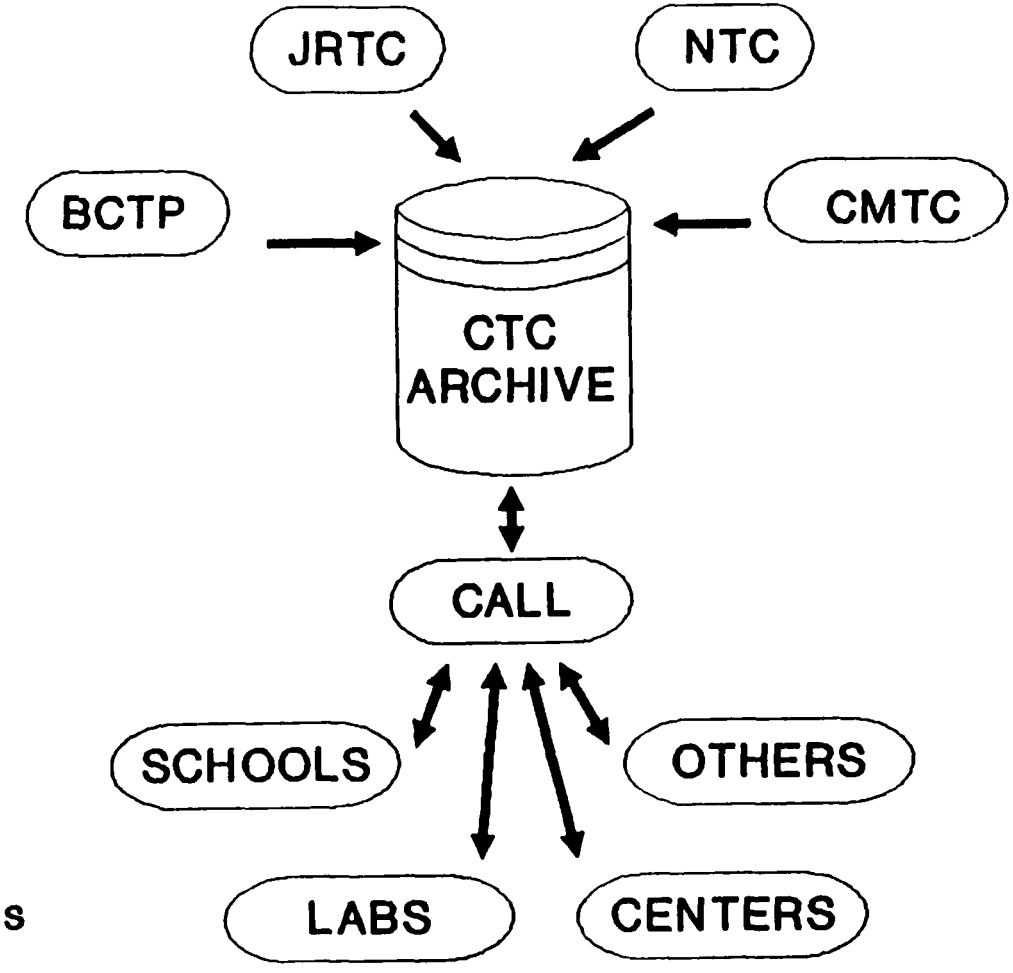
CHECK
CATALOG
ARCHIVE
INTEGRATE

ANALYZE

VERIFY GUT FEEL
FIND NEW INSIGHTS
SOLVE KNOWN ISSUES

DISSEMINATE

CALL BULLETINS, BRIEFS, VIDEOS
REPORTS & STUDIES



DATA COLLECTION

AMTP T&EO

ARMY STANDARD

SCHOOL HOUSE ▪
HOME STATION ▪
CTC

BATTLEFIELD EVENT DATA

FM NETS

80 CHANNELS RECORDED

FIRING ACTIVITY

WHO SHOOTS WHAT, WHEN

POSITION

10 DIGIT GRID

PLAYER STATUS

DEAD/ALIVE
TRACKED/UNTRACKED
SOURCE OF CASUALTY

COMBAT DATA COLLECTION DEVICE

"ELECTRONIC CLIPBOARD"

O/C & SME COMMENTS

TAKE HOME PCKG

EACH MSN ASSESSED BY BOS BY TF, CO/TM, AND SPT UNIT

AAR

FOR EACH ECHELON AFTER EACH MSN

OPORDS, LOGS JOURNALS

DATA PROCESSING

CTC

COLLATES DATA AND FORWARDS TO CTC ARCHIVE AT THE ARMY RESEARCH INSTITUTE, PRESIDIO OF MONTEREY, CA

ARI-POM

CREATES RELATIONAL DATABASE FROM INSTRUMENTED DATA

RECIEVES, PROCESSES, ARCHIVES,ANALYZES AND DISTRIBUTES DATA

RESPONSIBLE FOR ARCHIVE DEVELOPMENT

DATA ANALYSIS

ARI-POM

ANALYZES TRAINING ISSUES IN COORDINATION W/CALL
MAINTAINS AN INTEGRATED, COMPRHENSIVE RESEARCH FACILITY
CO-SPONSORS W/CALL & TRAC QUARTERLY DATA ANALYSIS WORKSHOPS

CALL

ACTS AS "GATEKEEPER" FOR ACCESS
RESPONDS TO CUSTOMER DATA REQUESTS
EXPLOITS DATA FOR THE DEVELOPMENT OF LESSONS LEARNED
IN CONSONANCE WITH THE TRADOC PRIORITY ISSUE LIST
COORDINATES ANALYSIS BY ARI, TRAC, RAND AND OTHERS

TRAC-WHITE SANDS MISSILE RANGE

ASSISTS WITH WORKSHOPS
PROVIDE SUPPORT TO CALL ON PRIORITY ISSUES AND STUDIES

SCHOOLS/PROPONENTS

EXPLOIT CTC DATA AS PART OF THE CBRS PROCESS
INCORPORATE FIXES TO DOCTRINE,TRAINING, DOCTRINE,
FORCE STRUCTURE AND LEADERSHIP

DISSEMINATE LESSONS LEARNED - FIELD

CALL DISTRIBUTES LESSONS LEARNED VIA MANY ROUTES:

CALL PUBLICATIONS

OVER 18,000 COPIES TO 4,500 ADDRESSES
BN THRU DA, ALL COMPONENTS

VIDEOS

FOUR VIDEOS HAVE BEEN DISTRIBUTED
SIX VIDEOS ARE SCHEDULED WORLD-WIDE TASC DISTRIBUITON IN FY89. TOPICS INCLUDE FIRE SUPPORT; CG, NTC OUTBRIEF DIRECT FIRE CONTROL, NCO LESSONS LEARNED, AND TOW

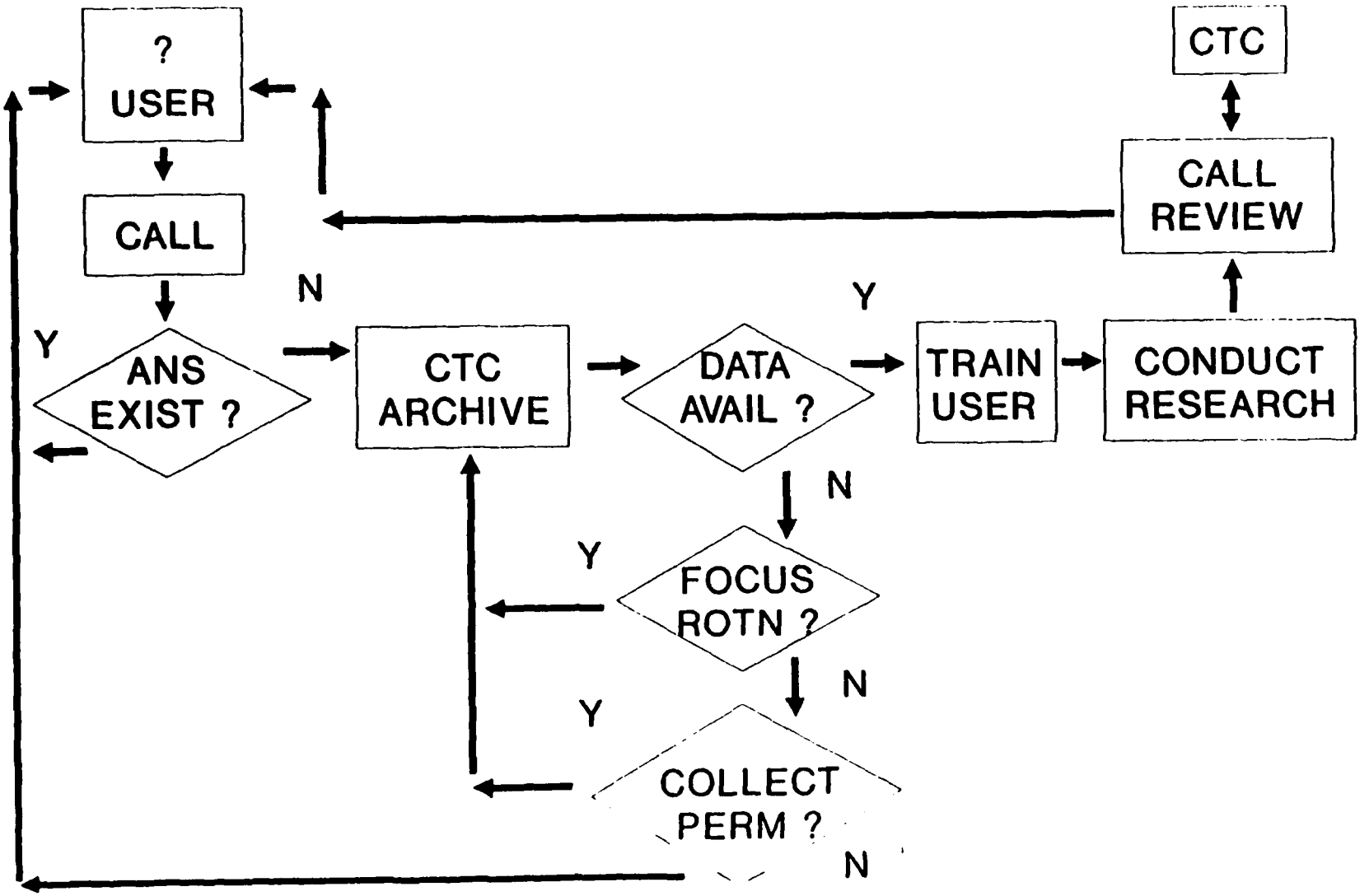
BRIEFINGS

PRE-COMMAND COURSE
TRAINING CONFERENCES
COMMAND AND GENERAL STAFF COLLEGE
COMBINED ARMS SERVICE STAFF SCHOOL

DOCTRINE REVIEW

LESSONS LEARNED INCORPORATED INTO DOCTRINE AND LITERATURE DURING CALL REVIEW

CTC ARCHIVE ACCESS PROCESS



GATEKEEPING

- CALL CONTROLS ACCESS AND COORDINATES TRAINING
  DATA IS HIGHLY SENSITIVE, FOUO
  CLASSIFIED PRODUCTS CAN BE DERIVED
  QUARTERLY WORKSHOPS AT ARI-POM

- CALL REVIEWS USER PRODUCTS
  COORDINATES W/CTC
  ENSURES UNIT ID PROTECTED
  CHECKS USER CLASSIFICATION REVIEW

TLA CUSTOMERS

TRADOC SCHOOLS & CENTERS
TRAC
RAND ARROYO
CAA
FORSCOM
NIGHT VISION LAB / HUGHES AC
TACOM / FMC
CGSC
AMSAA
OSD / LMI
USMA

NTC Orientation

MAJ Shadell
NTC

NTC Orientation Briefing

ARI-POM NTC Data Workshop

1. NTC Logo Slide

- The purpose of the briefing - to give you an appreciation for the organization, operations, and environment at the NTC.
- The briefing will assist you with your analysis by helping you to understand how the NTC does its training mission.

2. NTC Mission Slide

NTC MISSION

- TO PROVIDE TOUGH, REALISTIC COMBINED ARMS AND SERVICES JOINT TRAINING IN ACCORDANCE WITH AIR LAND BATTLE DOCTRINE FOR BRIGADES & REGIMENTS IN A MID TO HIGH INTENSITY ENVIRONMENT, WHILE RETAINING THE TRAINING FEEDBACK AND ANALYSIS FOCUS AT BN/TF LEVEL.

- TO PROVIDE A DATA SOURCE FOR TRAINING, DOCTRINE, ORGANIZATION, AND EQUIPMENT IMPROVEMENTS.

- Moving to full brigade level operations in mid-FY 93. Periods of full brigade operations (4-6 days) are conducted in every rotation.
- Training across the full spectrum of operations
- Two heavy maneuver battalions and three CS/CSS battalions in every rotation.
- Any data collection must be transparent to the training. Manual data is normally collected by the OCs or subject matter experts.
- Two training challenges:
    - Force-on-force against a realistic OPFOR
    - Live fire exercises at the task force level

3. NTC Terrain Slide

- A great variety of desert terrain at Fort Irwin - mountains, valleys, flat

desert, defiles. 65% of reservation is trafficable by track vehicle.
- Elevations at Fort Irwin vary from 5800 feet in NW part of reservation to 1300 feet in the south.
- Climate varies widely. Average low in winter is 36 degrees. Average high in summer is 105 degrees. Highest temperature recorded is about 130 degrees.
- Four inches of rainfall yearly, some snow.

4. Five Unique Aspects of the NTC

UNIQUENESS OF NTC

- SUPERIOR TRAINING FACILITY
- DEDICATED OPPOSING FORCE
- INSTRUMENTED BATTLEFIELD
- FULL TIME OBSERVER CONTROLLERS
- SOPHISTICATED LIVE FIRE EXERCISE

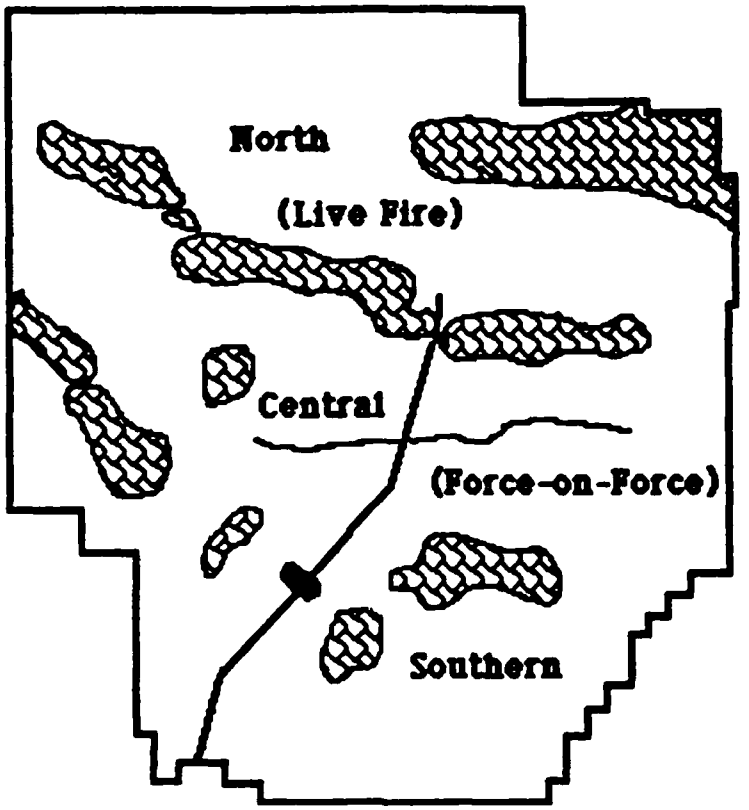
- 640,000 acres, just under 1000 square miles, 430,000 acres trafficable to track vehicles.
- Two US battalions (one armor, one mechanized infantry) form a dedicated OPFOR of motorized rifle regiment size. For brigade operations, the OPFOR signature is changed to show an MRD (-), composed of two attrited MRRs, command and control headquarters, recon units, forward security element, etc.
- Training is tracked with a computer system, video and commo monitoring
- The Operations Group supplies the observer controllers. 550-men. OCs are supplied for all staff positions and down to the platoon level.
- A large live fire area has radio-controlled targets, unconstrained by maneuver restrictions, can employ all organic and supporting weapons of the TF, to include CAS, Army aviation, artillery, and mortars.

5. NTC Location in California

- High desert of southern California, midway between Las Vegas and Los Angeles.
- Nearest city is Barstow, 32 miles to the south
- Remoteness has training advantages. Can employ smoke, riot control agents, and EW with few restrictions.
- Airspace over Ft Irwin is restricted to 35,000 feet, allowing free access by Air Force close air support.

6. Schematic of the Fort Irwin Reservation

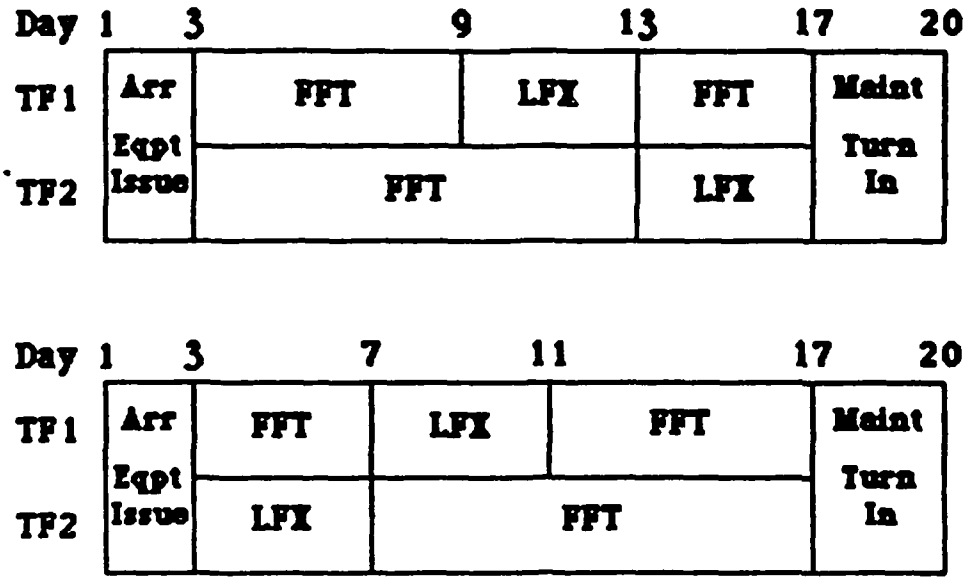
FORT IRWIN MILITARY RESERVATION



- 640,000 acres, 430,000 of which are available for maneuver
- Size is about 55 kilometers on each edge
- Neighboring military facilities are: Goldstone Deep Space Tracking Facility, China Lake Naval Test Center, Leach Lake Aerial Gunnery Range
- Three major maneuver corridors - northern, central, southern
  - Central and southern corridors are primarily for force-on-force. Their size is 6-12 Km wide and 30-42 km long
  - Northern corridor is for live fire. 6-12 km wide and 30 km long. Good employment space for all weapons. Can be used for force-on-force when no live fire is in progress.

7. Rotational Schedule Variations

TYPICAL ROTATIONS



- Two basic variations for rotational schedules. All rotations are 20 days in length, with about 14 days of actual field training.
- The period of brigade training occurs when both task forces are in force-on-force training (FFT), days 3-9 or 11-17.
- Choice of schedule is the training brigade's. Most brigades will choose to use the schedule which puts brigade operations in the last part of the training.

8. FY89 Rotational Schedule

ROT	UNIT	EQUIPMENT	DATES	REMARKS
89-1	5ID	M1/M113A2	07 - 30 OCT 88	H/L
	7ID			
89-2	4ID	M60A3/M113A2	31 OCT - 23 NOV	
89-3	24ID	M1/M2	24 NOV - 17 DEC	H/L
	82ABD			
89-4	1CD	M1/M2	03 - 26 JAN 89	
89-5	1ID	M1/M113A2	27 JAN - 19 FEB	R/O
	2-136IN			
89-6	5ID	M1/M113A2	20 FEB - 15 MAR	
89-7	9ID	M60A3/MTZ	16 MAR - 08 APR	
89-8	197IB	M60A3/M113A2	09 APR - 02 MAY	H/L
	101AA			
89-9	3ACR	M1A1/M3	03 - 26 MAY	
89-10	4ID	M60A3/M113A2	27 MAY - 19 JUN	R/O
	2-120IN			
89-11	1CD	M1/M2	04 - 27 JUL	
89-12	24ID	M1/M2	28 JUL - 20 AUG	H/L
	10MTN			
89-13	1ID	M1/M113A2	21 AUG - 13 SEP	
89-14	2AD	M1/M2	14 SEP - 07 OCT	

- Current FY 89 schedule, 14 rotations per year
- All CONUS heavy maneuver units train at NTC
- Normal brigade rotation is once per year, each brigade commander usually gets two rotations during his command tour.
- Each battalion usually gets a rotation every 24 months, one training rotation for a battalion commander.
- Force mix runs all the way from non-modernized (M60/M113) forces to fully modernized (M1/M2).
- Light forces will have a heavy/light rotation about 1-2 times yearly. There are three battalions in the brigade on these rotations.
- NG and reserve units also train here. So far, ten Army NG battalions have trained at NTC with their roundout unit.

9. Rotational Unit Troop List

ROTATIONAL UNIT TROOP LIST

BRIGADE HHC	\	
ARMOR BATTALION	|	
INFANTRY BATTALION (MECH)	|	
FIELD ARTILLERY BATTALION	|	
FORWARD SUPPORT BATTALION	|	
ENGINEER COMPANY	|-->	3500 SOLDIERS
AIR DEFENSE ARTILLERY BATTERY	|	
ATTACK HELICOPTER BATTALION (-)	|	
SIGNAL PLATOON	|	
MILITARY POLICE PLATOON	|	
USAF TACP	/	

- The brigade will bring two of its maneuver battalions, one armor, one mech infantry.
- The battalions will normally task organize into balanced task forces of two armor companies and two infantry companies.
- Normally supporting DS artillery and forward support battalions also accompany.
- Brigade also brings a combat support/combat service support slice.
- An attack helicopter battalion (-) or divisional cavalry squadron (-) will usually control the Army aviation.

10. OPFOR Augmentation

OPFOR AUGMENTATION

2-3 INFANTRY COMPANIES	\	
1 ENGINEER COMPANY	|-	APPROX 500 SOLDIERS
1 AT-5 BATTERY (-)	/	

- UNITS ARE USUALLY CONUS BASED
- UNITS VOLUNTEER FOR THIS TRAINING
- NATIONAL GUARD AND U.S. MARINE UNITS ALSO RECEIVE THIS TRAINING
- UNITS ATTEND AN OPFOR ACADEMY WHERE THEIR SOLDIERS RECEIVE TRAINING ON SOVIET TACTICS AND DOCTRINE

- The OPFOR is augmented to ensure it has the required combat power to realistically oppose the Blue brigade.
- Infantry companies are used to give the regiment a realistic amount of dismounted infantry.
- Units come from CONUS installations.
- The OPFOR training is not at the soldier level. They operate using Soviet-style tactics at the company and mission level, but their aggressiveness and small unit tactics are US tactics and procedures.

11. Soldiers Debarking From USAF Aircraft

- Units are deployed from their home station either by USAF aircraft or by commercial charter (bus or aircraft). They are bused to Fort Irwin from home station or from Norton AFB in San Bernardino.

12. M1s in NTC Draw Yard

- Units draw their major combat vehicles from a contractor maintained stock of vehicles at NTC.
- These are not full battalion sets of equipment, but are the primary combat vehicles.
- There are battalion sets of M60A1 tanks, M60A3 tanks, and M1 tanks. An M113 based infantry battalion set of vehicles is also available.
- Bradley units must bring their vehicles from home station. Bradleys will be issued to NTC later this year.

13. Support Vehicles on Rail Head

- Units must bring many combat support and combat service support vehicles from home station. These are carried on about 370 rail cars per rotation.
- Rail transportations costs are among the major costs of the rotation.

14. USAF Close Air Support

AIR FORCE - CLOSE AIR SUPPORT

AIR WARRIOR PROGRAM - GEORGE, AFB

- **200-250 SORTIES/ROTATION**
- **BOTH BLUEFOR & OPFOR PROVIDED CAS**
  BLUEFOR USUALLY SUPPORTED BY A-10 AIRCRAFT
  OPFOR SUPPORTED BY EITHER OA-37, A-7, F-4 OR F-16 AIRCRAFT
- **AIRCRAFT COME FROM ALL PARTS OF THE CONTINENTAL UNITED STATES**
- **UNITS TRAINED: 9th AF**
  12th AF
  AIR NATIONAL GUARD
  AIR FORCE RESERVE

ALL AIRCRAFT CARRY A NTC COMPUTER INSTRUMENTATION PACKAGE

- USAF support of training is very extensive. NTC receives about 50% of all close air support sorties flown by the Air Force in CONUS.
- Six to twelve sorties will fly in support of BLUEFOR and OPFOR on each mission.
- Battlefield air interdiction and tactical air reconnaissance missions are flown out of the Red Flag program at Nellis AFB, Nevada (1-2 per rotation).
- Only the GAU-8 30mm cannon on the A-10 is MILES-equipped, and the aircraft do not carry defensive MILES pods. All other casualties and aircraft attrition is assessed subjectively by the OCs. Aircraft carry instrumentation pods which enable them to be tracked on the computer screen.

15. Menu of Typical Tactical Missions

TYPICAL TACTICAL MISSIONS

MEETING ENGAGEMENT
MOVEMENT TO CONTACT
HASTY ATTACK
DELIBERATE ATTACK
DEFENSE IN SECTOR
DEFEND FROM BATTLE POSITION
RELIEF IN PLACE
PASSAGE OF LINES

- Training objectives and the METL (mission essential task list) are submitted 60-90 days before a rotation by the training brigade.
- Scenario writers come up with a unique scenario for each unit. No two scenarios are the same.
- The scenario is tailored to provide the maximum training benefit to the unit. Conditions and force ratios are varied to achieve this. This has a tendency to even out performance levels of all units and must be taken into account in any analysis
- Each battalion will usually have 5-7 force-on-force missions and three live fire missions during a rotation.

16. OPFOR In Action

- The opposing force (OPFOR) is the primary counter-training force for the BLUEFOR.
- Formed by combining two US battalions into a Soviet-style motorized rifle regiment
- Excellent skills - highly trained, well motivated, train at a high level for over 200 days per year.
- Excellent at reconnaissance, breaching, and massing combat power at the proper place.
- Use a combination of modified American equipment and actual Soviet equipment.

17. T72 Visually Modified Vehicle

- An M551 Sheridan ARAAV is modified using bolt-on applique panels to show a realistic appearance of Soviet-type vehicles, in this slide a T-72

tank.
- The appropriate weapons system is also added, with the MILES characteristics of that system
- The regiment uses about 40 T-72s during a regimental attack.

18. BMP1 Visually Modified Vehicle

- The BMP-1 is the workhorse of the regiment. It is also a visually modified M551, armed with the appropriate weapons.
- 90-110 of these vehicles will be used on a regimental attack.

19. OPFOR Column

- The OPFOR column shows some typical vehicles - a BMP-1, a ZSU-23-4, and 122mm SP howitzers of the regimental artillery battalion.

20. MTLB Carrying Soldiers

- Some actual Soviet equipment is used. Soviet MTLBs, normally general purpose vehicles or artillery prime movers, are used as troop carriers. NTC has 16 of these vehicles.

21. HIND-E Visually Modified Aircraft

- UH-1s are used to replicate the HIND-E. NTC has four of these aircraft.
- They are fully MILES equipped. Defensively they can be engaged and killed by BLUEFOR systems, including MILES air defense systems. Offensively, they are armed with MILES which replicate the 30mm gun, 57mm rockets, and AT-6 missile. HINDs are also instrumented so they can be seen on the computer screen.

22. Soldier Wearing Individual MILES Equipment

- The Multiple Integrated Laser Engagement System (MILES) is the primary casualty assessment tool.
- All soldiers forward of the battalion rear boundary must wear an individual MILES harness.
- The M16 rifle, machine guns, and other weapons have MILES transmitters which enable them to kill on the battlefield.
- The major combat, combat support, and combat service support vehicles also have MILES kits, a total of 500-550 MILES-equipped systems.

23. M60A3 With MILES and Instrumentation Packet

- The M60A3 tank has a MILES kit on it.
- The white antenna indicates that the vehicle has also been equipped with a player package on it to enable the vehicle to be seen by the computer in the Operations Center.
- The vehicle uses the Hoffman main gun simulator to give a realistic firing signature.

24. Dragon Gunner Firing and Showing ATWESS Signature

- The Anti-Tank Weapons Effects Simulator System (ATWESS) is used to give a signature for anti-tank missiles.
- All weapons fired at NTC must have a realistic signature.
- All simulators must be resupplied in the bulk of an actual round. Trucks can carry only as many simulators as they would be able to carry actual rounds of ammunition. This stresses the CSS operations of the unit.

25. Fire Marker with HMMWV

- The "firemarker" system is used to display the results of artillery firing.
- 9-14 firemarkers use HMMWVs with radios, manpacks (portable position location devices), and pyro projectors.
- The computer "fires" missions as input by analysts who monitor the FA units at NTC. The analyst sees the strike of the rounds and vectors the firemarker to the area. The firemarker gives the artillery signature and then casualties are assessed.

26. Pyrotechnics from Firemarker HMMWV

- The system has weaknesses in that it is slower than the actual fires. The actual suppression value of artillery does not affect maneuver operations.

27. HMMWV Smoke Generator

- Smoke is also an effective combat multiplier, especially with the open expanses of desert at NTC.
- 7-12 smoke generators roam the battlefield to mark artillery delivered smoke. Their operation is the same as the firemarker.
- Units must learn to operate in the obscured environment. They must also learn to effectively employ the MILES in a reduced range environment when smoke is being employed.

28. Soldier on Obscured Battlefield

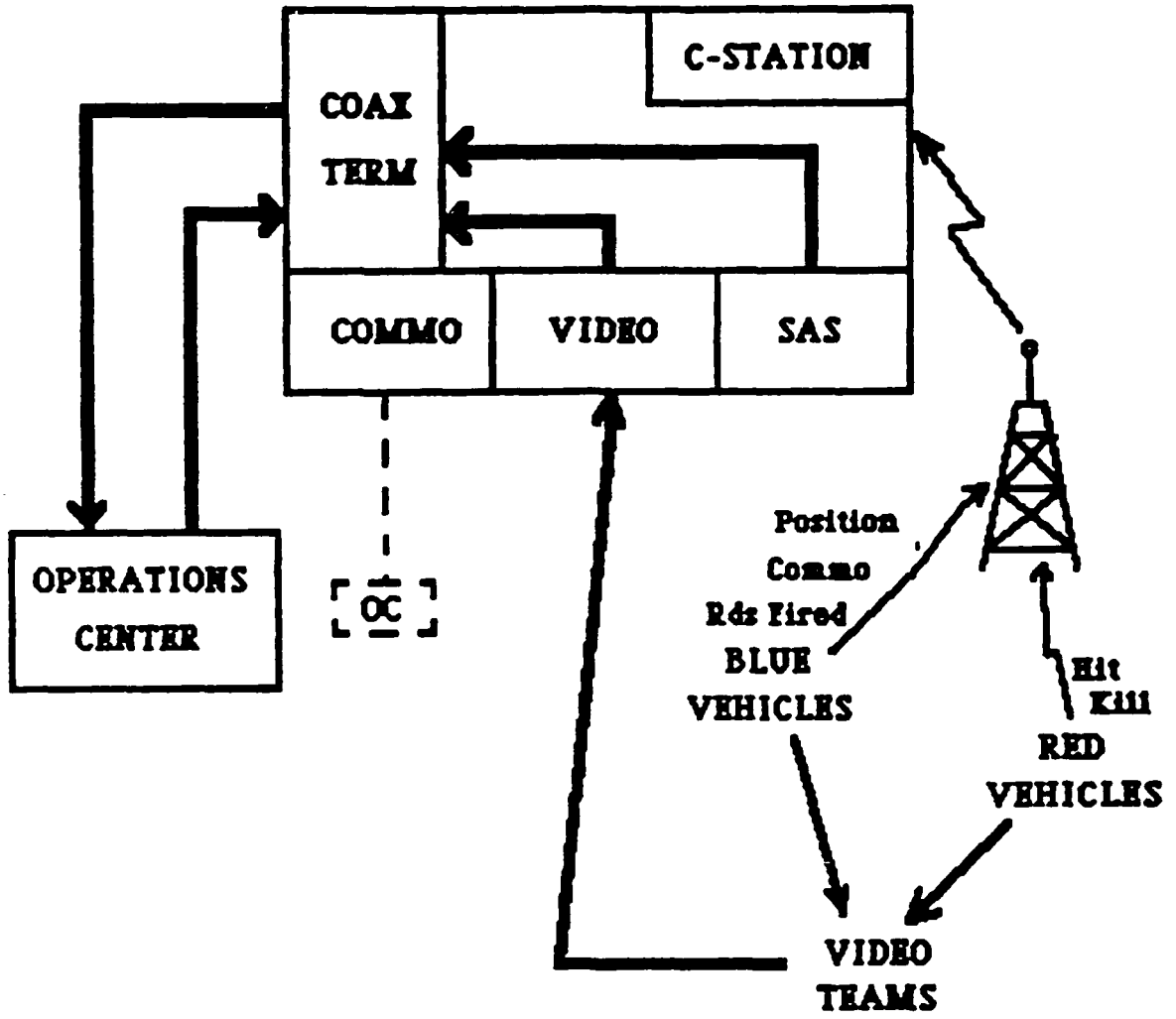
- NBC operations are simulated at the NTC with the use of riot control agents and simulated persistent agents.
- Units must use protective masks, suits, chemical agent detectors, and decontamination procedures.

29. Minefield and Barrier

- Engineer operations are heavily stressed and very important.
- The only engineer simulation is the use of dummy mines. After the mines are emplaced an OC makes minefield assessments.
- All other engineer operations are real. All barriers and obstacles must be effective for their intended purpose. The OPFOR will only stop at a barrier for as long as it takes to breach or bypass it.

30. Instrumentation System Schematic

INSTRUMENTATION SYSTEM



- Three major components of the NTC instrumentation system - computer instrumentation, video monitoring, commo monitoring.
- The key part of the instrumentation system is the player kit, used on approximately 370 vehicles (the computer can track up to 500 systems, but only about 370 vehicles are instrumented). The player kits record events (firing, hit, near miss, kill, use of radio) that occur on the vehicle. Approximately 100 manpack position location systems are also used. These provide position location, but not firing events.
  - The C-station controls the interrogation of the player units through a system of A-stations scattered around the reservation.
  - Ground players are polled every 5 seconds, helicopters every 0.5

seconds, and aircraft every 0.1 seconds.
  - When a vehicle is polled it transmits a range pulse which, if picked up by three A-stations, can be used to triangulate the location of the player. The player unit also then transmits all the events which have occurred on the vehicle since the last polling.
  - The polling is not perfect. From 10-30% of vehicles will be lost to the computer at any one time. If a vehicle is lost for more than 10 minutes, its event data is also lost.
  - The C-station down links the information on position location and events to the Operations Center where other computers process and display the information.
  - The information is stored for future use in two forms - RDMS (raw event) data and CIS (processed) data. These tapes are stored at ARI-POM.
- Two fixed cameras and mobile video units also monitor the battle on closed circuit television. The video footage is used for AAR presentation.
- We also monitor 90 radio nets and record 80 nets for future use.
- All the instrumentation is controlled from the operations center by the Training Analysis and Feedback (TAF) cells.
- The OC in the field controls the operations within his TAF. The instrumentation exists ultimately to assist him in his assessment of the unit.

31. Picture of Digitized Terrain

- The output on the DeAnza screen is in the form of a digitized map which can be overlaid with computer graphics of maneuver, fire plans, vehicle locations and identities.

32. Direct Fire Firing Events

- When a matched pairing occurs, the events are registered on the screen. This is done by a firing vector which connects the firer to the target. If the target is killed a black box will surround the killed vehicle.
- Matched pairings are determined by a computer based time coincidence algorithm which takes the identity of the hit vehicle and attempts to match the hit to a firing which occurred within the weapon range of the vehicle.
- Matched pairings occur in only about 30% of the hits, near misses, or kills recorded by the system.

33. Near Miss Firing Event

- A dotted firing vector indicates a near miss firing event. Again, a matched pairing must be achieved to get the firing vector.

34. IFCAS Box on Computer Screen

- The IFCAS (Indirect Fire Casualty Assessment System) box represents the lethal area of an artillery mission. The artillery analyst in the building inputs the data, the computer fires the mission and displays the output.
- The artillery analyst then directs a fire marker (indicated by the white box) to the area and the firemarker sets off the appropriate amount of pyrotechnics.
- The maneuver analysts then look at the forces inside the box and call the field so the casualties can be assessed by the field controllers.

35. Soldier at Workstation

- The workstation has four major components
  - The TV monitor for watching video of the battle
  - The computer monitor and graphics tablet for manipulating the graphical display.
  - The support display, an alphanumeric terminal for displaying text and numbers.
  - The communications console for monitoring the communications nets.

36. M60A3 Night Fire

- Live fire exercises are the second major training challenge for the training unit. The primary counter-training force is a set of remote controlled targets scattered throughout the live fire area.
- Both offensive and defensive exercises are run.
- All organic and supporting weapons of the task force can be employed.
- Safety is under the control of the unit chain of command. The OCs will intervene only if absolutely necessary.
- The live fire area is not a range. It has no barber poles or range roads.

37. Live Fire Target Mechanism

- As of March 88 there were 660 targets in the live fire area. 1100 total targets will be in position by summer. The targets are stand alone.
- The major components of the target are:
  - The lifting mechanism
  - The target control mechanism
  - The thermal blanket
  - Ballistic and MILES sensors
  - Pyrotechnic projectors

38. Live Fire Target Showing Hoffman Signature

- The targets can replicate a firing vehicle using Hoffman charges.

39. Live Fire Target Showing Steel-on-Steel Signature

- The targets register a hit using a pyrotechnic device.

40. Live Fire Target Showing Black Smoke

- The targets burn with a heavy black smoke after they are killed.

41. RCMAT Flying in Live Fire

- A one-fifth scale MIG-27 (Remote Control Military Aircraft Trainer) is used as a target for air defense crews.
- Flies on each day live fire mission about 500-1000 meters in front of the task force.
- Can be shot down with live ammunition.
- Has a MILES sensor package to indicate hits by a Stinger MILES

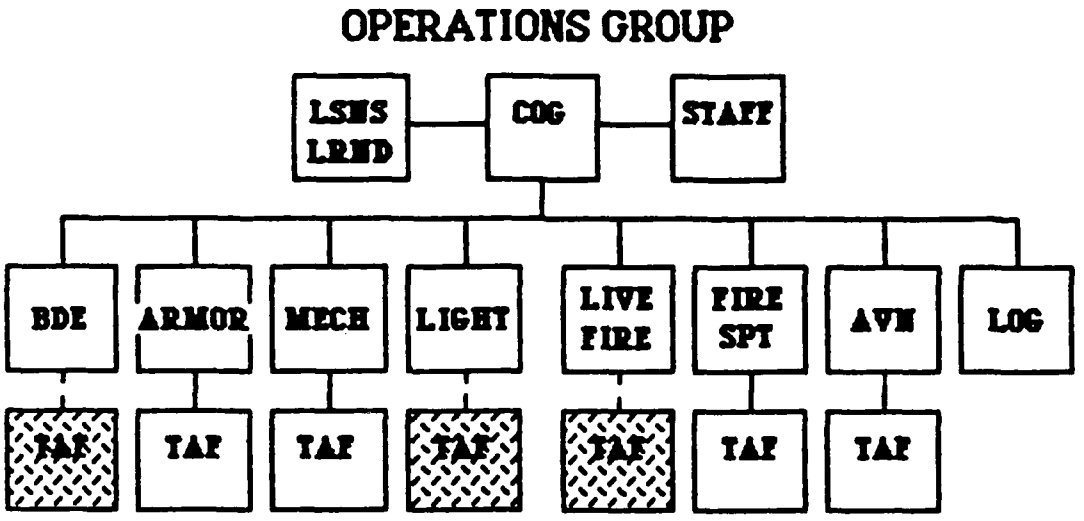
42. Computer Screen Showing Live Fire Defense from BP

- The computer system is used to track the live exercises. Displayed is a task force defense from a battle position.
- The computer simulates the movement of a motorized rifle regiment against the Blue unit. As the simulation moves over a target band the targets are raised and fired.
- The simulation will not raise a target closer in to the unit after it has been killed.

43. Computer Screen Showing IFCAS Box

- The computer screen also shows IFCAS boxes. These boxes indicate the actual strike of rounds on the ground.
- Used to check the timing and accuracy of indirect fires.

44. Operations Group Organization Chart



- The organization of the Operations Group - the primary cadre of trainers for the rotational brigade.
- OCs must normally have served in a unit in the position for which they are the observer-controller
- Normally a lieutenant colonel is the team chief.
- The different teams cover the full spectrum of combat, combat support, and combat service support operations.

45. Maneuver OC Team Position Chart

OBSERVER-CONTROLLER POSITIONS

SENIOR TASK FORCE OC
DEPUTY/XO
TOC (S-2, S-3, FSO, NBC)
ALOC (S-1, S-4, BMO, MEDICAL)
CO/TM
- MANEUVER PLATOONS
AT PLT
SCOUT PLT
SUPPORT PLT
ADA
ENGINEER
MORTARS

- There is an OC for every staff and key leadership position in the task force or unit.

46. Daily After Action Reviews

DAILY AFTER ACTION REVIEWS

- CONDUCTED AT PLATOON, COMPANY/TEAM, AND TASK FORCE LEVELS
- CONDUCTED AFTER EACH MISSION
- DETAILED ANALYSIS OF THE TASK FORCE OPERATING SYSTEMS
- STRENGTHS AND WEAKNESSES ARE IDENTIFIED
- RECOMMENDATIONS AND COACHING SERVE TO CAUSE IMPROVEMENTS

- AARs are discovery learning. Because we know what happened in an exercise, there are usually no arguments. The unit, in the AAR, can concentrate on discovering why and how something happened.
- Not a critique, but a two-way dialogue with the OC as moderator.
- Platoon and company AARs occur immediately after the battle. Task force AARs occur in a van five hours after the mission. They contain computer, video, and audio clips.
- All TF AARs are videotaped and can be used for data purposes.

47. Take Home Packages

TAKE HOME PACKAGE

- COMPREHENSIVE SUMMARY
- MULTI-MEDIA PRESENTATION
- DEVELOPED FOR EACH BATTALION AND COMPANY
- PROVIDES HOME STATION TRAINING DEVELOPMENT BASE

- Two parts - video component (AAR tapes) and a written summary
- Given to the unit
- Stored in ARI-POM

48. Training Summary

TRAINING CONDUCTED

74	**ROTATIONS**
326	**BATTALION COMMANDERS**
1925	**COMPANY COMMANDERS**
16958	**OFFICERS**
72397	**NCO'S**
250466	**SOLDIERS**

- as of 23 Feb 88

- Training summary as of rotation 88-5
- We are seeing a percolation up through the ranks as soldiers return as tank commanders and squad leaders, lieutenants as company commanders, etc
- There have also been training benefits in Europe as NTC-experienced officers and soldiers relay the results of their NTC training to other units.

Take Home Packages

Ms. Hamza
ARI

NATURE AND FORMAT OF TAKE HOME PACKAGES

General Characteristics

- Primarily narrative
- Some battle statistics

Format for THP

Missions Conducted

Section I - General Summary

Section II - Mission Statements
- Commander's Intent

Section III - Battlefield Operating System/Lessons Learned
- One Tab per BOS

Tab:

A-G - Operating Systems

1. Trends/Recommendations
2. Live Fire

H - NCO Support Channel

Section IV - Statistical Analysis

1. TF Battle Losses
2. Company/Team Battle Losses
3. Weapon Systems Causing OPFOR Casualties
4. Battle Loss Ratio

Annex 1 - Company/Team AAR
- Mission:

a. Plan
b. Prepare
c. Execute
d. Lessons Learned

Take Home Package
MS – DOS Naming Convention

MS – DOS Suffix	
.AS =	Armor Task Force
. FS =	Fire Support
.BS =	Brigade
.VS =	Aviation
.LS =	Forward Support Battalion
.MS =	Mech Task Force
.TOC =	Table of Contents

MS – DOS Prefix	
xxC. =	Company Team Observations
xxM. =	Mission Statement
xxT. =	Trends
xxD. =	Statistics
xxN. =	NCO
xxL. =	Live Fire
xxS. =	Operating Systems Lessons Learned

ES Summary Format for Each Annex

1) Commander's Concept of task force's mission

2) Narrative Summary of Mission Execution

3) Battle Statistics
   - Task Force Battle Losses
   - Company/Team Battle Losses
   - Weapon Systems Causing OPFOR Casualties
   - Battle Loss Ratios

4) Impact of Operating System on Mission
   - Intelligence
   - Maneuver
   - Fire Support
   - Air Defense
   - Mobility/Countermobility
   - Combat Service Support
   - Command & Control

5) AAR Observations
   - Presented by operating system with specific FM references

Completeness

- THPs available for Armor and Mech Infantry task forces from 81–01 to present
- Approximately a 1–2 month lag before THP is received

Location

- Building 106 – Check out/in through SFC De La Rosa

Utility

- Battle statistics tend to be very accurate
- Some of the narrative information may be useful in conjunction with digital data, Operation Orders, etc.

Continuity

- Format changes were frequent prior to 1986
- More statistics were included prior to 1986, but inclusion of statistics was inconsistent

Limitations

- More labor intensive to use than digital data
- Much of the narrative is boilerplate
- Available battle statistics can only be used to address a narrow range of issues

AAR Video Tapes

Ms. Hamza

ARI

AFTER ACTION REVIEW(AAR)

Prior to use of MILES at NTC, critique used as primary performance evaluation and teaching method.

AAR intended to provide constructive, comprehensive, standardized format for training feedback.

Purposes of conducting AAR are to:

(1) improve accuracy and detail of feedback available to unit leaders;

(2) identify collective training deficits;

(3) reinforce individual learning; and,

(4) increase motivation.

Major Objectives to be Accomplished by AAR:

(1) identify actions/events and their outcomes;

(2) analyze actions and outcomes in terms of probable outcomes;

(3) examine courses of action to note deviations from original plans, why actions were taken, and outcomes;

(4) collectively formulate recommendations, solutions to improve strategy; and,

(5) analyze effectiveness of major operating systems on basis of critical points.

AAR Designed to Focus on Four Performance Areas:

(1) operations orders (OPORDs);

(2) fragmentary orders (FRAGOs);

(3) initial contact with opposing forces, resupply, and reconstitution operations; and,

(4) Intelligence Preparation of the Battlefield (IPB) product.

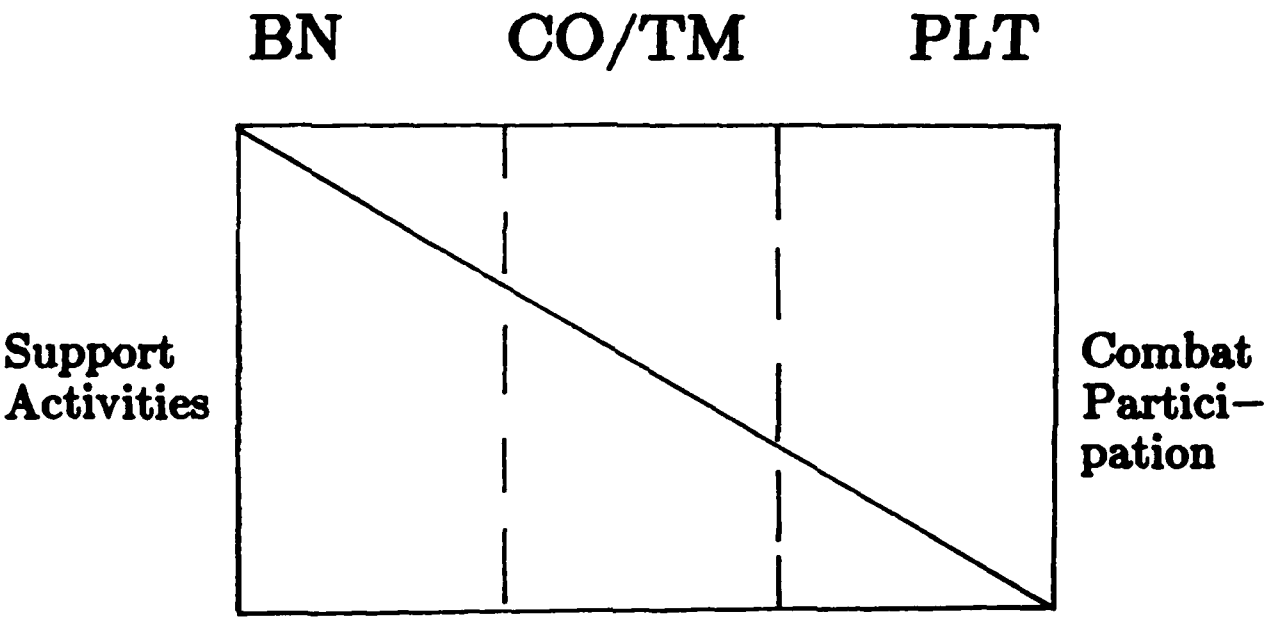
AAR Structure

Structural Components (*as function of* combat processes):

(1) Planning

(2) Preparation

(3) Execution



Research Considerations for Use of NTC AAR Tapes

(1) 6 (30 minute-long) tapes are received from each NTC mission.

(2) 3-4 Offensive and Defensive missions available per rotation for:
- Mechanized infantry TF
- Armor TF

(3) 300 half hour-long tapes are received per NTC Rotation
180 one hour-long tapes are received per NTC Rotation (prior to rotation 8805)
Also included are special AARs such as CSS and Artillery

(4) One or two of the set of principal mission (MTC, DATK, DSEC) tapes may be entirely or partially unusable because of audio and/or visual disturbances.

(5) NTC AAR data collection (observation) time is time- and labor-intensive.
A well-define purpose for observation must be specified, and observational guidelines are useful.

Examples of Research Uses of AAR Tapes

– establish standard formats for AAR for each echelon and for special AARs by conducting a content analysis and formulating a structured discussion plan to be followed during the AAR –– use participatory approach

– study characteristics of AAR in terms of effectiveness as a training feedback mechanism

– gather supplementary information regarding changes in courses of action, reasons for actions taken relative to mission outcome

– identify and summarize major doctrinal principles that are being discussed (or ones that are refuted or de–emphasized and why)

– gather and synthesize soldiers' and leaders' recommendations/solutions to difficulties encountered on the battlefield –– use in exemplary vignettes

MANEUVER GRAPHICS AND AUDIO

FM RADIO RECORDINGS (NTC ONLY)

- 80 CHANNELS RECORDED SIMULTANEOUSLY
- BOTH TASK FORCES, OPFOR, OBSERVER/CONT, BRIGADE
- TAPES TIME TAGGED
- CRIB SHEET MATCHES NET WITH CHANNEL
- TIME PERIOD ON REEL BOX EXTERIOR
- ALLOWS YOU TO GET INSIDE THE CDR'S HEAD
- CAN BE RECORDED ON TO CASSETTE

EXTRACT OF DATA SOURCES

ARMOR TASK FORCE

DELIBERATE ATTACK

TABLE OF CONTENTS

LIST OF FIGURES

INTRODUCTION

This handbook is designed to illustrate data sources available at the Monterey Field Office of the Army Research Institute and their application in battle analysis. To demonstrate the utility of this information, an actual battle is presented.

Source materials used in this battle analysis are as follows:

VAX Digital Tapes: These computer tapes can be converted to both pictures and graphs. In this case, the pictures show grids, contours, obstacles, control measures, OPFOR and task force elements. For purposes of analysis respective subordinate units are shown at various times during the battle.

Graphs used for this battle indicate firing activity by the entire task force in relation to the OPFOR and the company/teams relative to the OPFOR. In addition, the firing data is time tagged and appropriate losses are indicated.

DeAnza Visual Screen: This station offers a continuous picture of the flow of the battle. It shows all the OPFOR and task force players and their status. Since the terrain on the screen can be edited to relief, contour, or mobility, it represents a very clear visualization of conditions faced by the task force.

Take Home Package: This document discusses in some detail the planning, preparation, and execution phases of the battle. It does so by operating system and by task force and company/team echelon. It also contains Battle Damage Assessments for all players.

Communication Tapes: These tapes cover all player and control nets and are a rich source of information. Their primary drawback, however, is that analysis is extremely labor intensive.

ANALYSIS OF
TASK FORCE DELIBERATE ATTACK

Critical Events

The task force doomed itself to certain high attrition before it ever crossed the Line of Departure. The Scouts had halted short of the obstacle and were able to offer the task force no information regarding either the obstacle or OPFOR dispositions. This ensured that everything the task force found on the objective would be a surprise.

Fire support planning was excellent, but the execution suffered from lack of knowledge of the OPFOR situation on the objective. Even after the task force stalled at the obstacle, there was no clear picture of the battlefield. As a result, a well coordinated fire support system was reduced to attacking single identified BMPs or tanks with multiple artillery mission and CAS sorties. In the final analysis, the fire support system, which was prepared to fully support the task force scheme of maneuver, was rendered ineffective.

The Mission

OPFOR: Motorized Rifle Company with 4 tanks and 12 BMPs

TASK FORCE:

TEAM A	TEAM B	TEAM C	TEAM D	TF CONTROL
A-IN (-)	B-TK (-)	C-IN (-)	D-TK (-)	AT PLT
3/B-TK	2/A-IN	1/D-TK	3/C-IN	2 ENG PLTs

The task force plan was to conduct a night road march to the Line of Departure, crossing it prior to first light in two columns. Teams B and D (the tank teams) would lead their respective columns, and they, with the Anti-Tank Platoon (TOWs), would set up in overwatch positions when they reached the objective. Teams A and C (the infantry teams) would then assualt the objective with the two engineer platoons. The Scouts were sent ahead to recon the objective area.

The task force Operations Order was timely and understood by subordinate leaders. The Fire Support Plan, in particular, was very well coordinated and thoroughly understood by all the key players. The planned transition from road march to attack formation, however, lacked detail and no guides were assigned.

ANALYSIS OF
TASK FORCE DELIBERATE ATTACK

At the company/team level, the Operations Orders were timely, but each left off one critical element: Obstacle breaching. The tank teams did not feel a need to address it because they would be in overwatch. The infantry teams did not address it becasuse that was the responsibility of the engineers. The engineers planned only the actual breaching and not the aspects of security, obscuration, and suppression, which they saw as a maneuver team function. With the exception of Team D, there were no rehearsals conducted.

The Scouts, which had been sent forward during the night, ran into an OPFOR security BMP and went into a hasty defense three kilometers short of the objective. As a result, they acquired no information on OPFOR disposition or obstacles.

During the night move to the LD, Team C was unable to find its link-up point and became intermixed with other units. While untangling, one platoon leader fell asleep and the tank platoon moved out rapidly, leaving the rest of the team behind. Team C did not fully regroup until dawn and lagged well behind the task force. In another development at the LD, Team B stalled in confusion and Team A passed through it, taking the lead.

When first light came all these developments became apparent. The task force commander, however, noted that the movement was going well and that they were in the flat desert floor. To wait for Team C to catch up and reverse the positioning of Teams A and B could invite disaster. The appearance of an OPFOR helicopter only underscored the issue. The commander decided to continue in his present configuration. (Fig. 1)

The movement itself was well controlled, despite nearly continuous attacks from OPFOR CAS, helicopters (one of which was destroyed by a main gun round from the S-3's tank), and security elements. During the move, the TOC was hit with an NBC attack which negated any impact it might have had on the battle.

Team D made the initial contact against an OPFOR dismounted element on the southern ridge just in front of the obstacle. The obstacle itself was on the OPFOR side of a low finger extending from the ridge. It was impossible for the task force to see it until they were right on top of it. Team D swung into the ridge behind its now dismounted infantry and began pushing toward the objective.

The rest of the task force stalled behind the finger that shielded the obstacle from view. As OPFOR artillery began to fall with greater intensity, Team A was ordered over the finger. Once over the finger, Team A immediately ran into wire and mines and direct fire supplementing the artillery. Team A would force a breach 30 minutes later, during which time it was hit with 1,945 artillery rounds and lost every officer in the company. (Fig. 2)

Figure 1

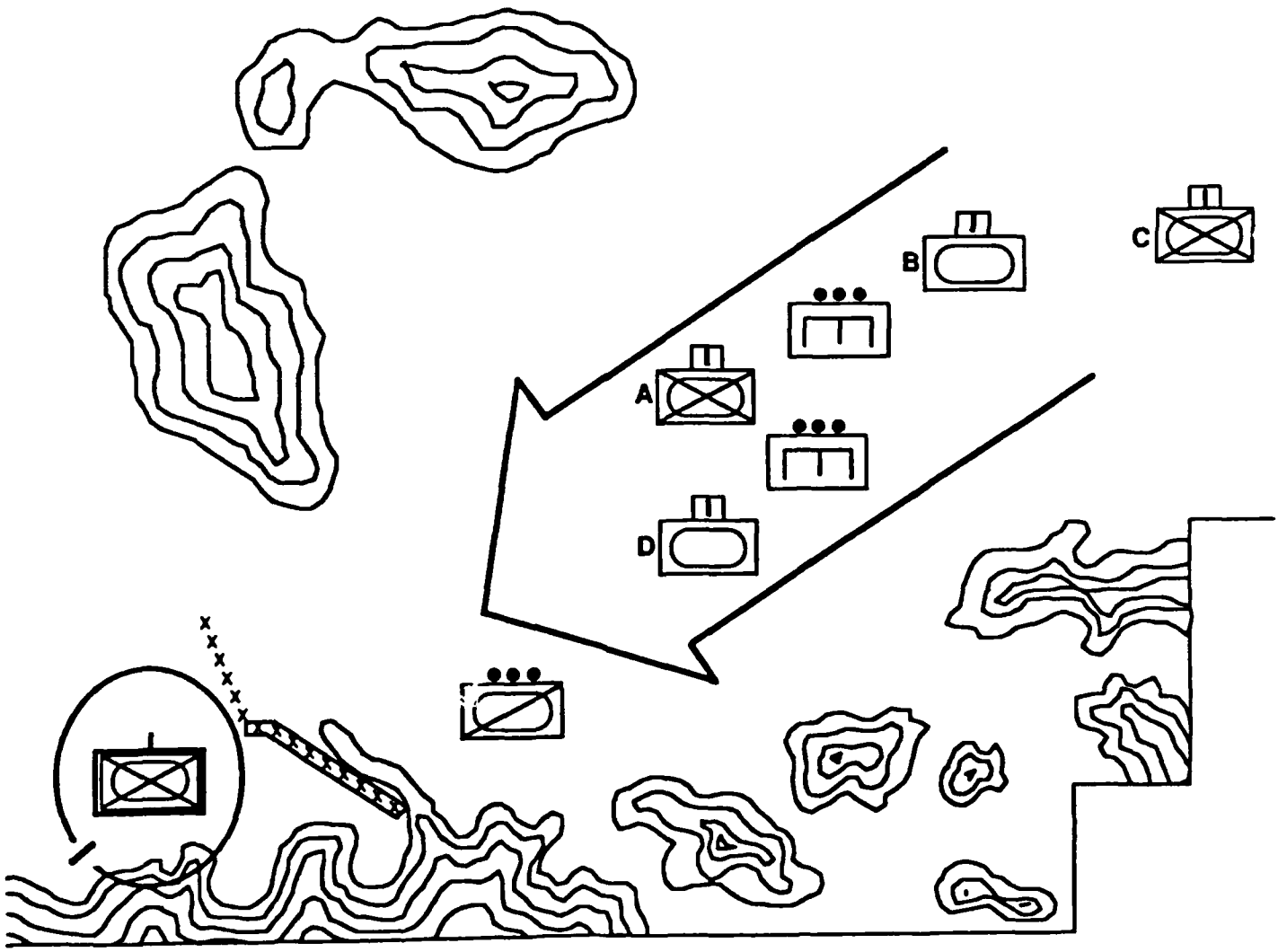
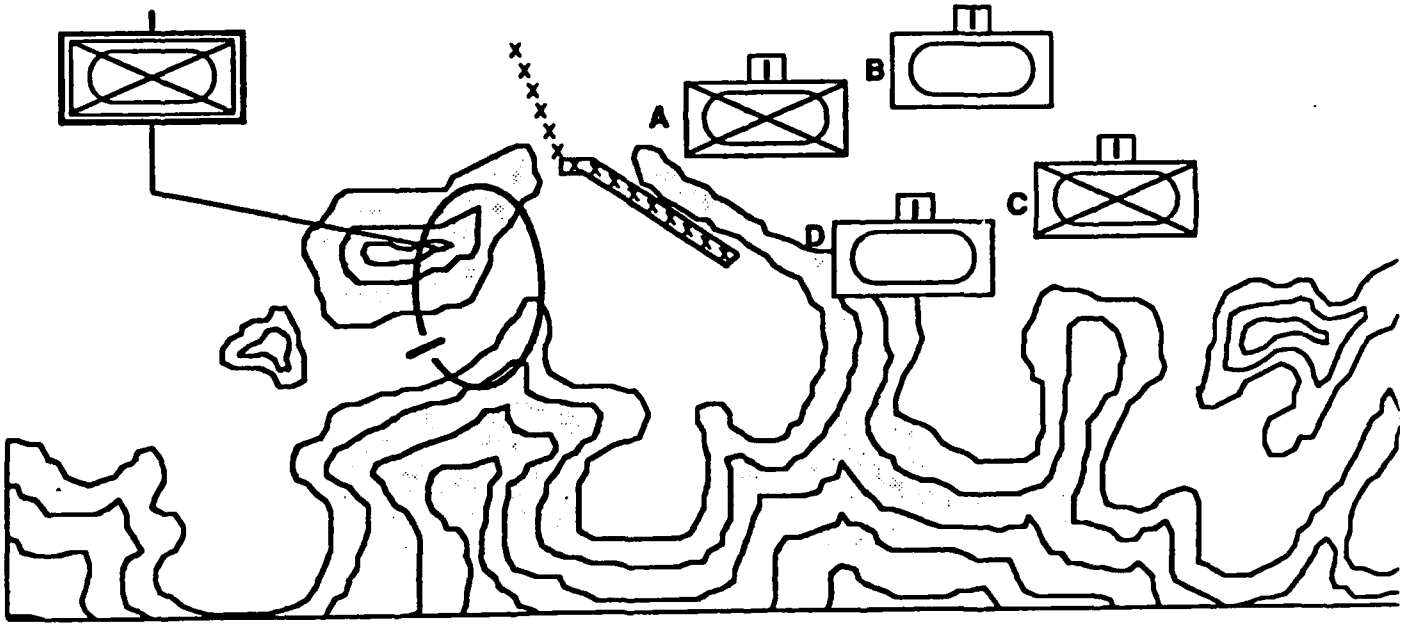


Figure 2



Task force fire support was now continuous with artillery and CAS alternating against reported targets. The targets, however, were specific OPFOR positions and vehicles and they were being called by grid coordinates. In one case, Team A called in a correct grid only to have two digits transposed when it was relayed by the battalion commander back to the artillery. The FSO transposed two other digits when he relayed it back to the ALO controlling the CAS. The positions that Team D was reporting were so close as to cause the team to back up before they could be fired. One aircraft flew through falling artillery and was destroyed.

The net result was the fire support elements were so busy reacting to independent calls that they were unable to mass fires at any one point. No clear picture of the battlefield ever developed. When the mortars, who were set up to cover the movement, called to offer assistance, no one knew where to send them. They spent the battle to the rear, out of range.

Meanwhile, Team D continued to push against ever thickening resistance. With its infantry nearly gone, the team commander called for help. Team C was ordered forward to support Team D.

Team C was located at the base of the southern ridge just to the rear of the seam between Team D on the ridge and Team A on the far side of the finger. It started forward over the wide base of the finger past destroyed tanks, APCs, ITVs, and Vulcans. Initially mounted, it too came under heavy fire. It reported that it was behind Team D and moving up dismounted under heavy fire. Team D continued to call for help and reported that it could not see Team C.

Team C pressed ahead and lost its commander. Team D continued to call for help and the task force commander received reports that indicated that Team C was far to the right of the task force wandering about the desert. The 1st Platoon Leader, now in command, reported that they were continuing to move through the rear of Team D.

Neither Team C, nor anyone else, knew that Team C was wading into the center of the storm directly between Team D and Team A. A few minutes later the 3rd Platoon Leader reported that he was now in command.

Team A reported a breach and popped green smoke to show its location. Team B, who had spent the battle in relative safety behind the finger to the rear of Team A, was ordered forward. Team B hesitated and set about policing up its infantry who had dismounted earlier. Once that was accomplished, the infantry were sent over the finger to find the gap. They found only the destroyed remains of Team A and could not locate the breach.

Since Team A had reported the breach on its right flank, the task force commander told Team B to swing around the right side of Team A. The Team B commander had no idea where the right flank of Team B was and took his two tank platoons in a wide arc around the finger. They ended up due north of the objective in the flat desert floor. (Fig. 3)

Three tanks were lost almost immediately and the rest found what cover they could. The team was picked off one by one.

Team D finally broke through lessening OPFOR fire and launched into the objective with little better than a pick-up team of platoon strength, all that was left. They plowed into the southern flank of the OPFOR position and surged halfway across before they were halted. In the course of the battle the team had destroyed six OPFOR vehicles and two helicopters. It cost them their commander and all three platoon leaders. (Fig 4)

The OPFOR, having lost three tanks and eight BMPs, decided to call it quits and vacated the position.

FIGURE 3

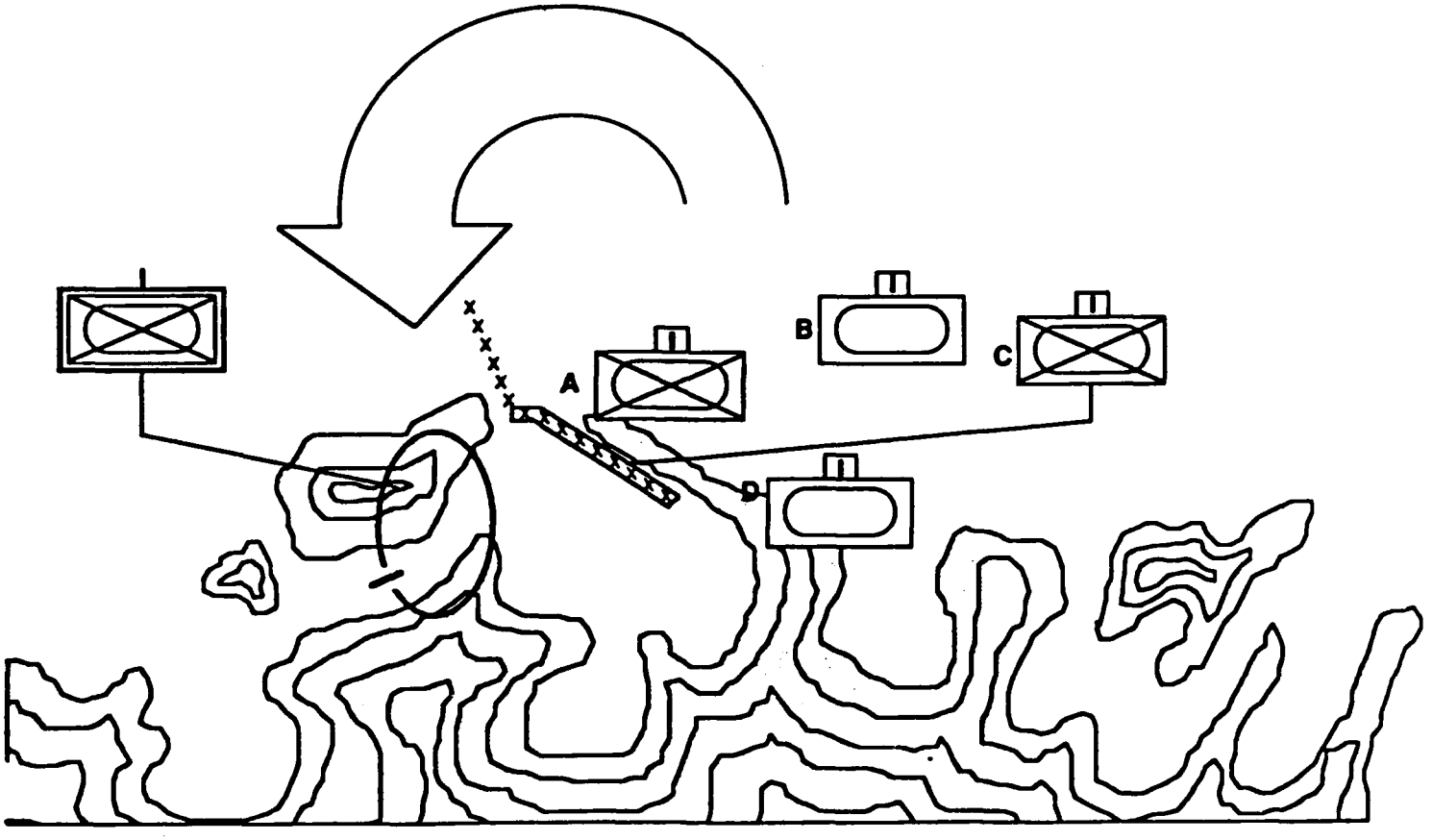
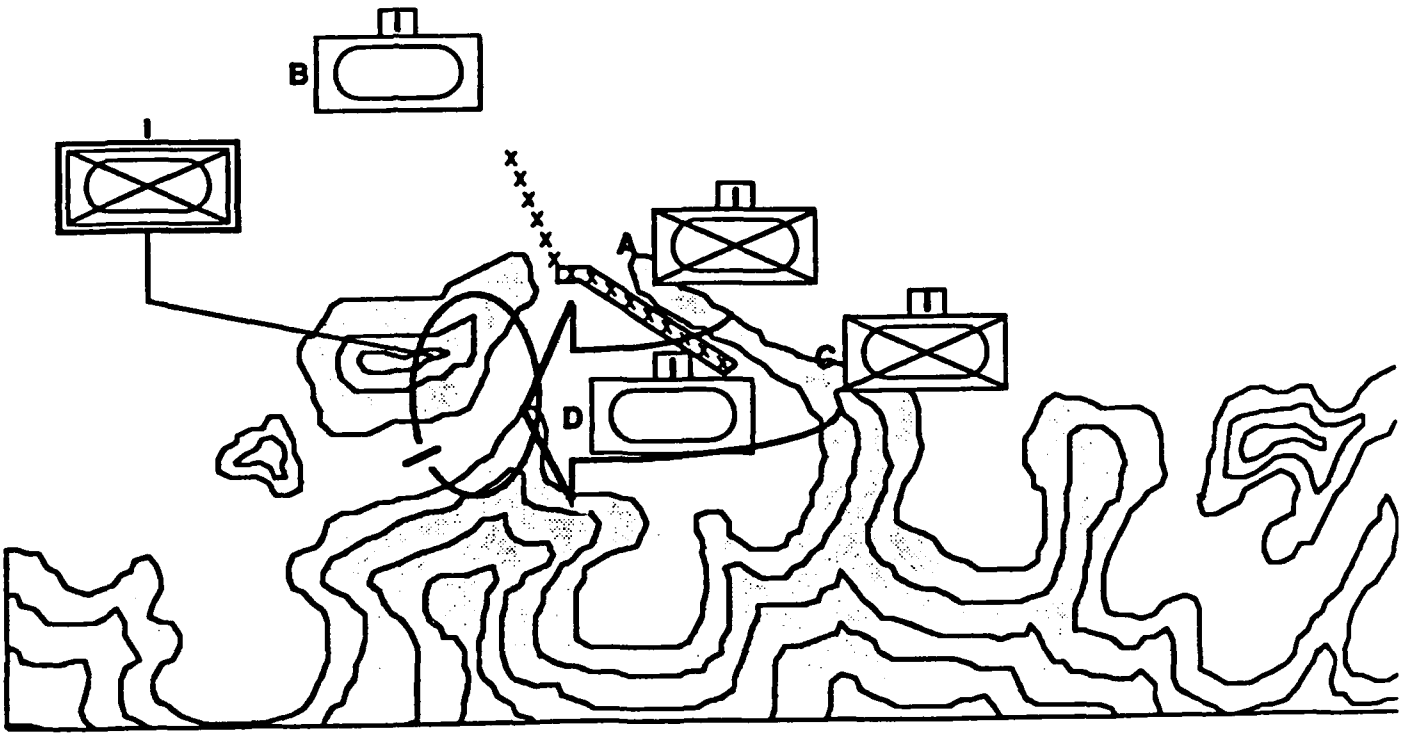
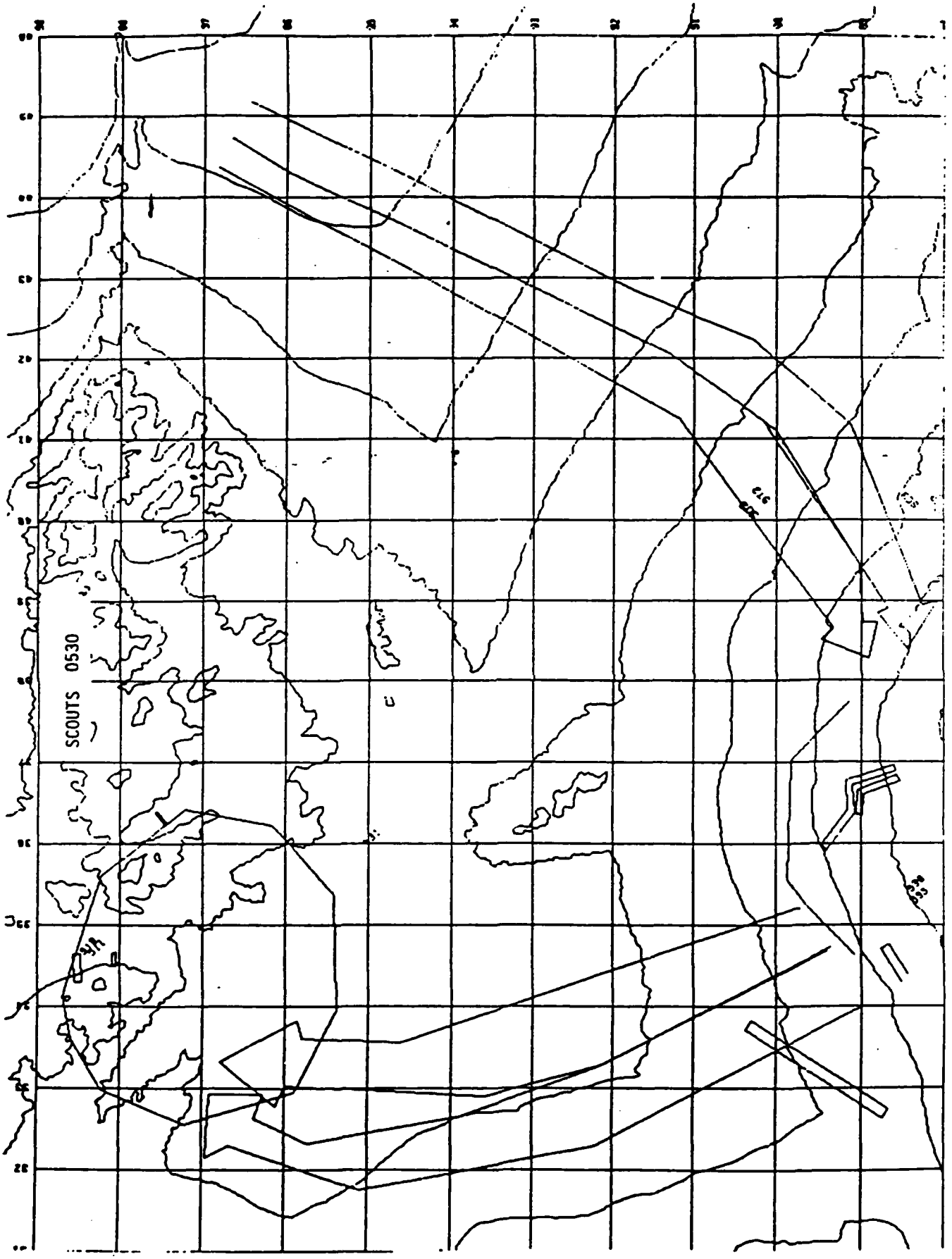
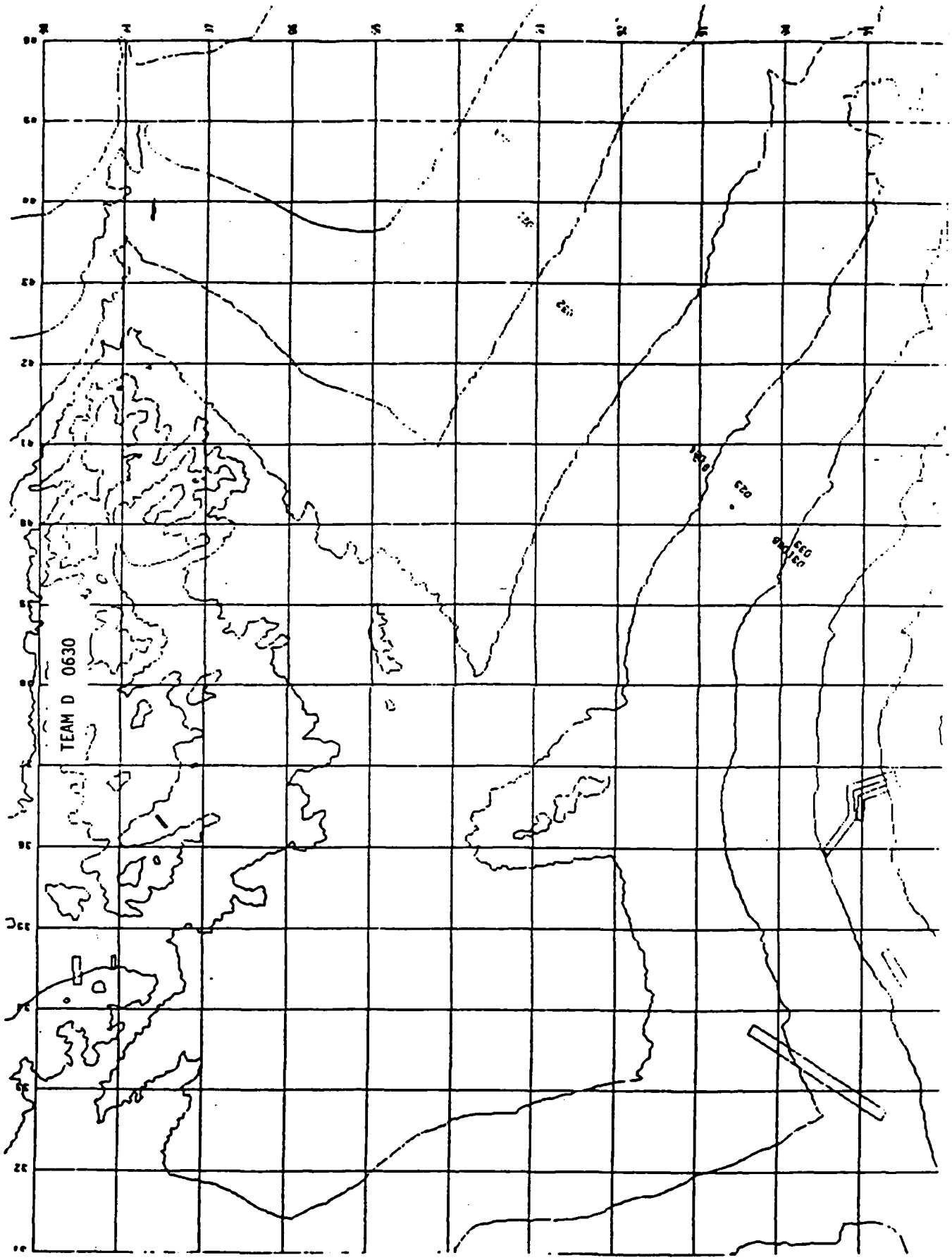


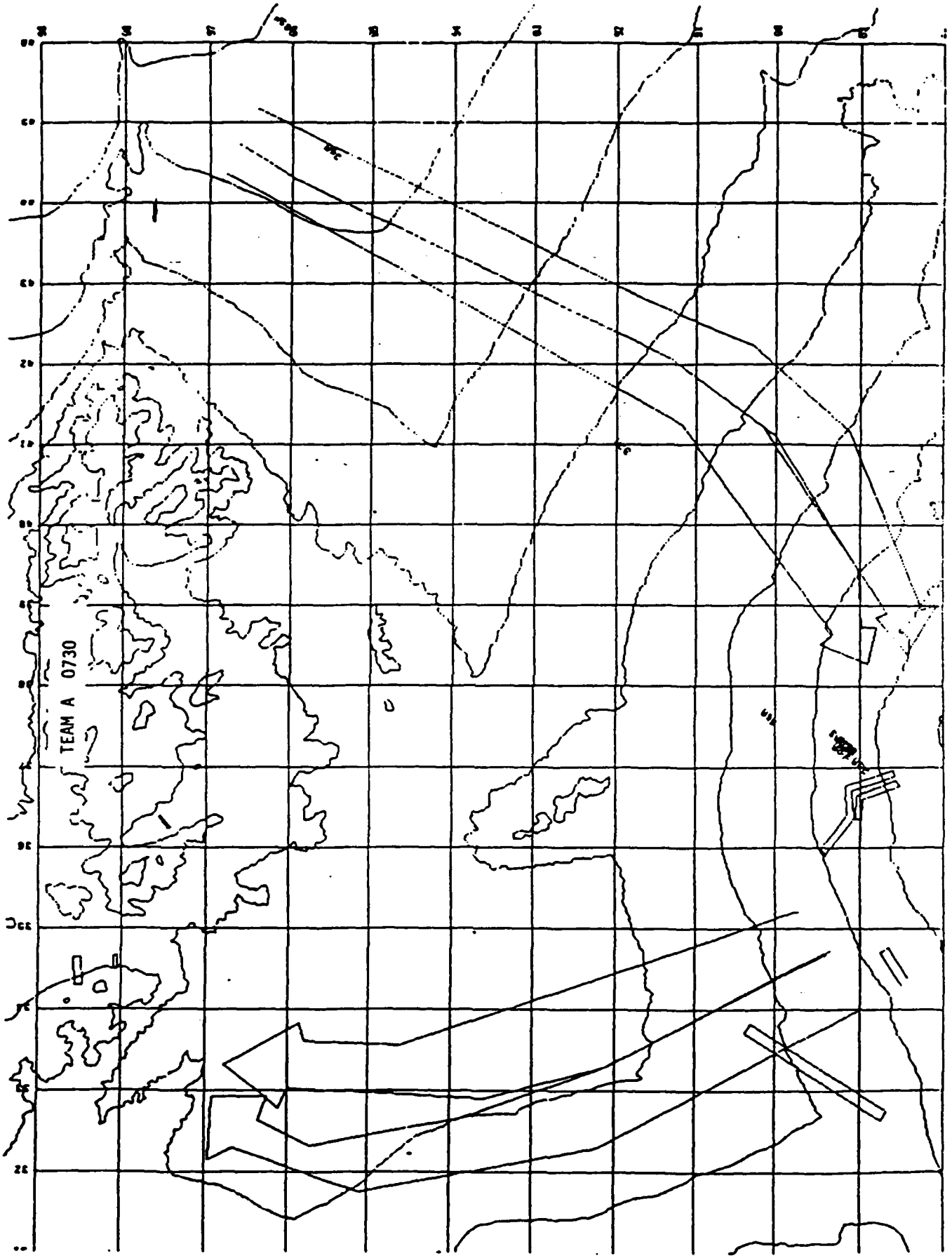
Figure 4

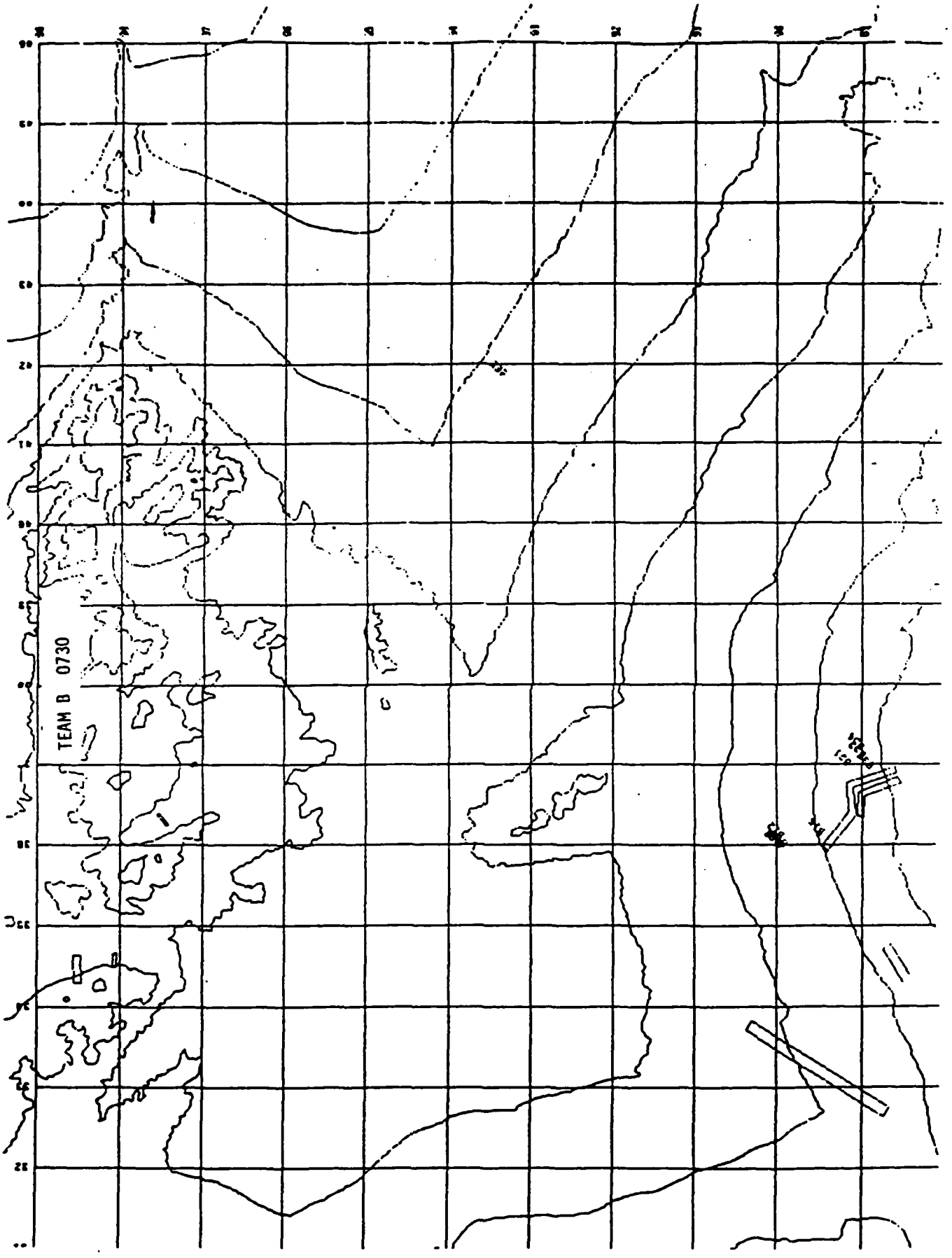


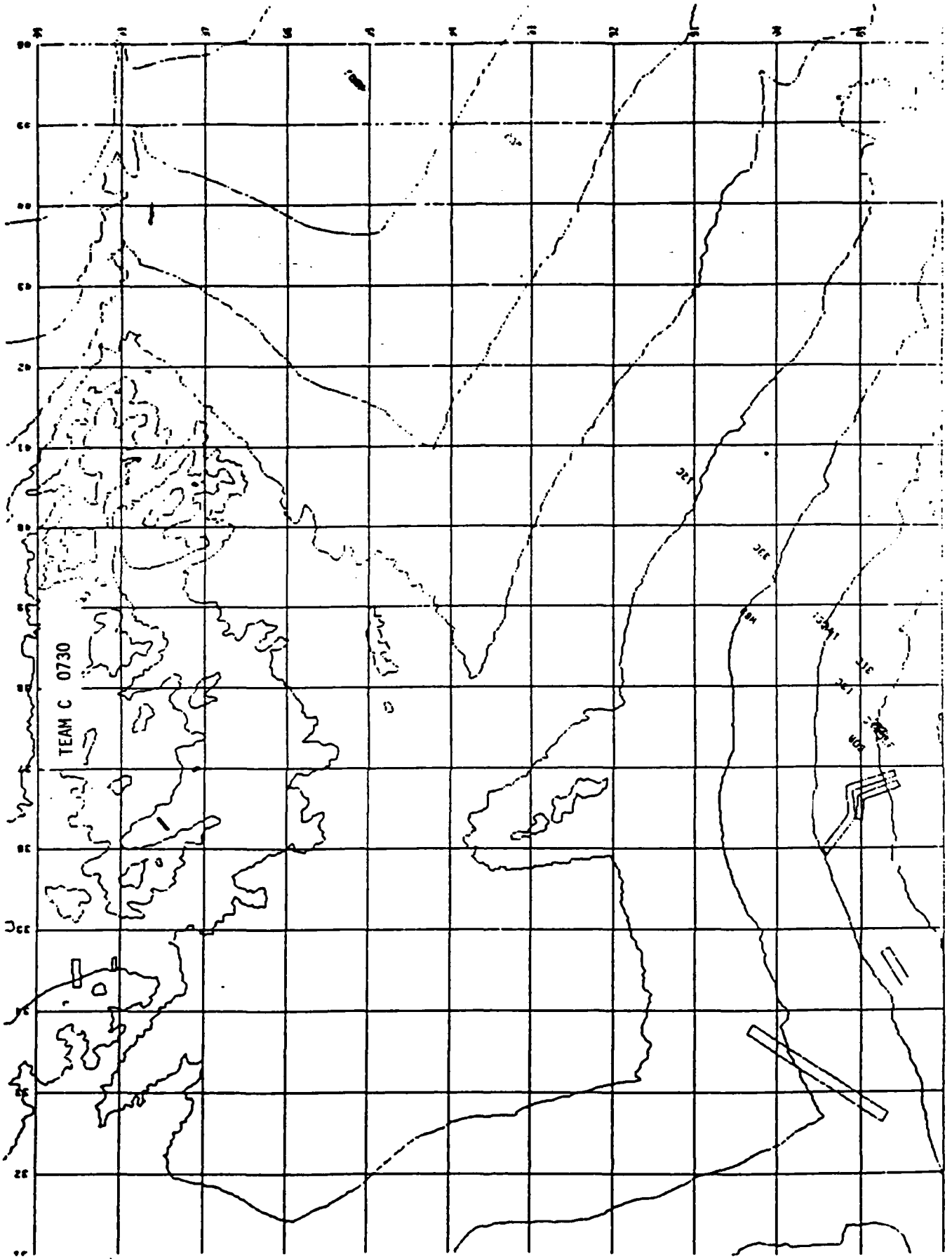
VAX
DIGITAL
TAPE
EXTRACT

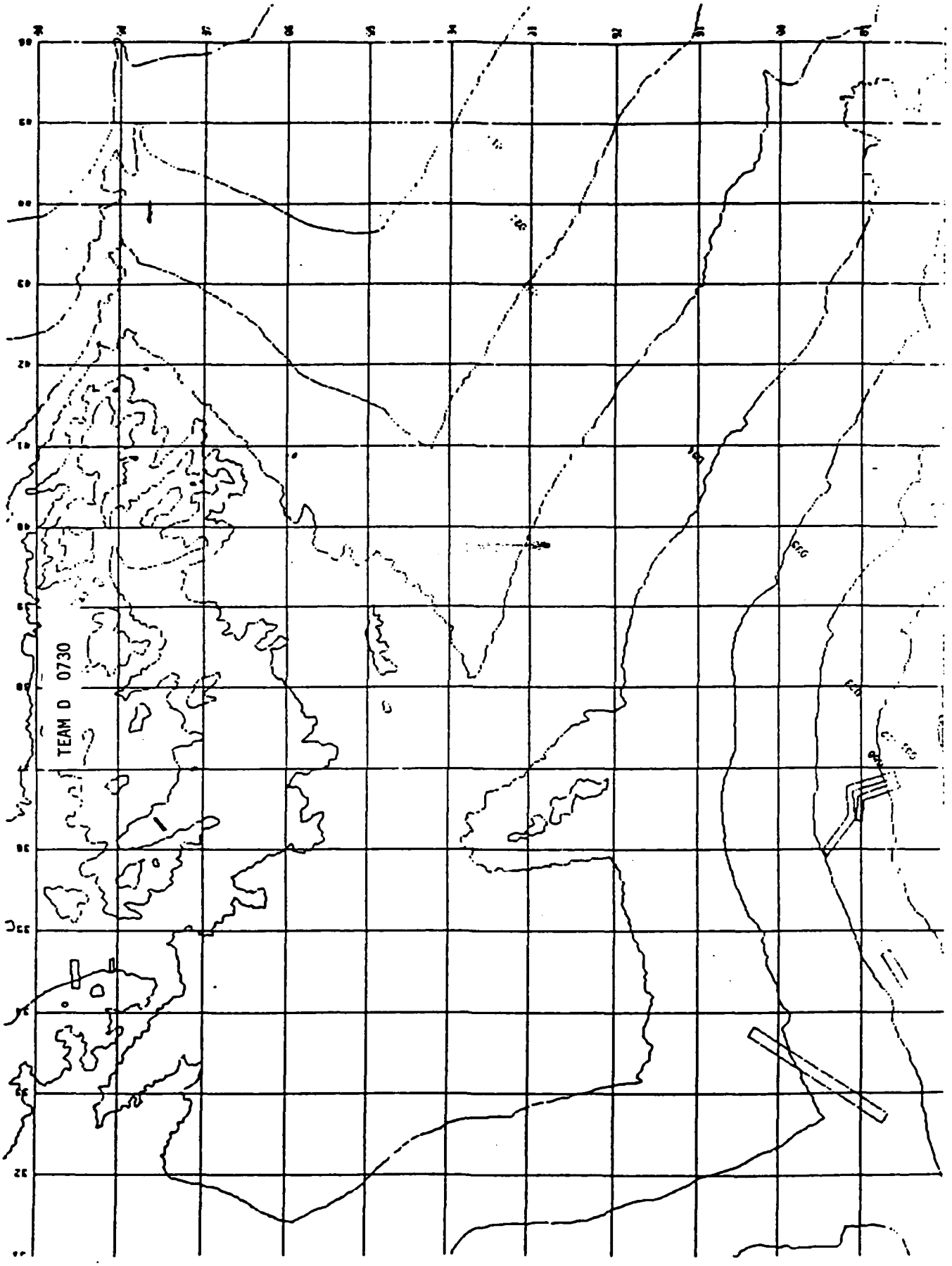

SCOUTS 0530

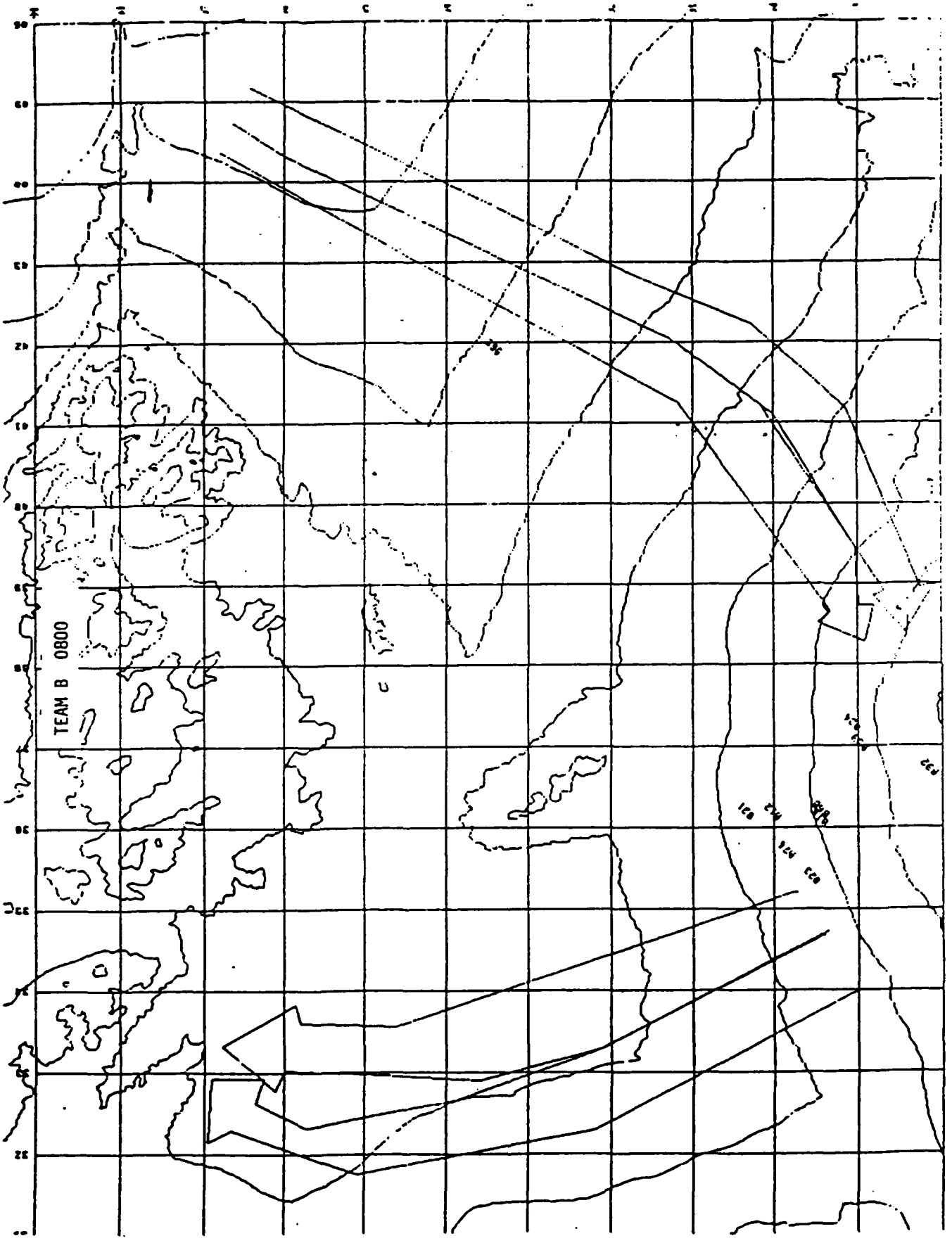

TEAM D 0630


TEAM A 0730


TEAM B 0730

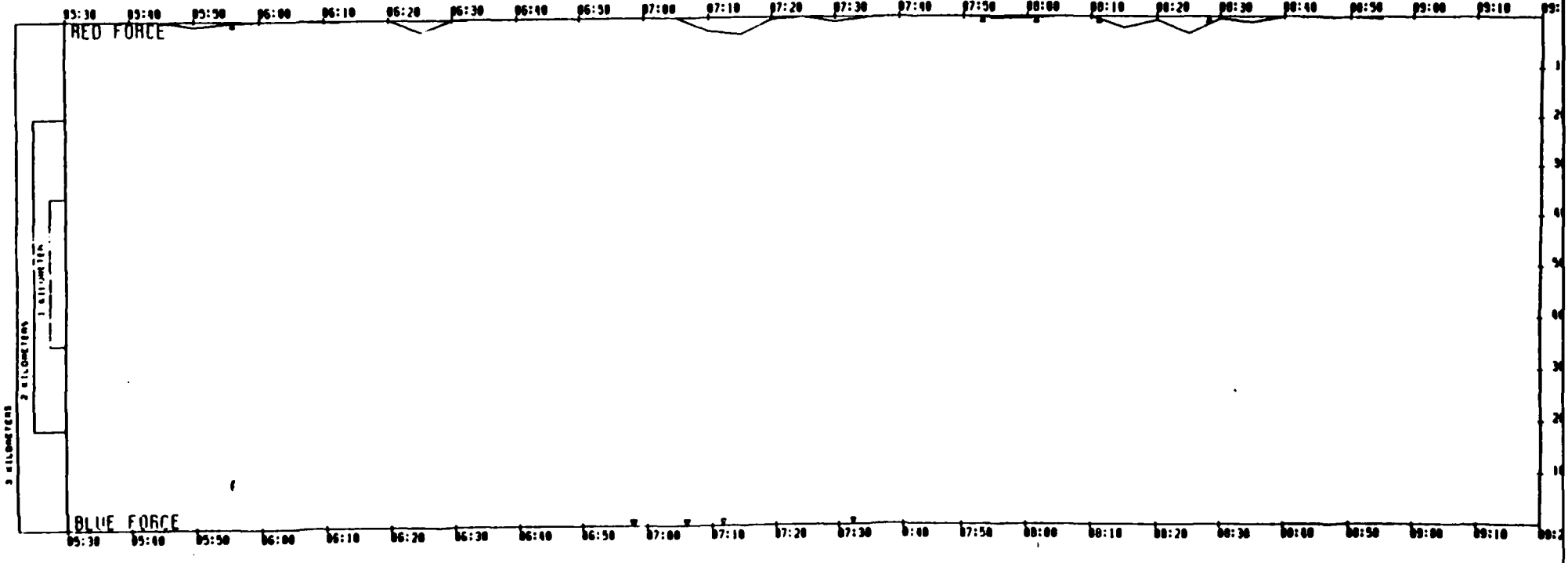

TEAM C 0730


TEAM D 0730


TEAM B 0800

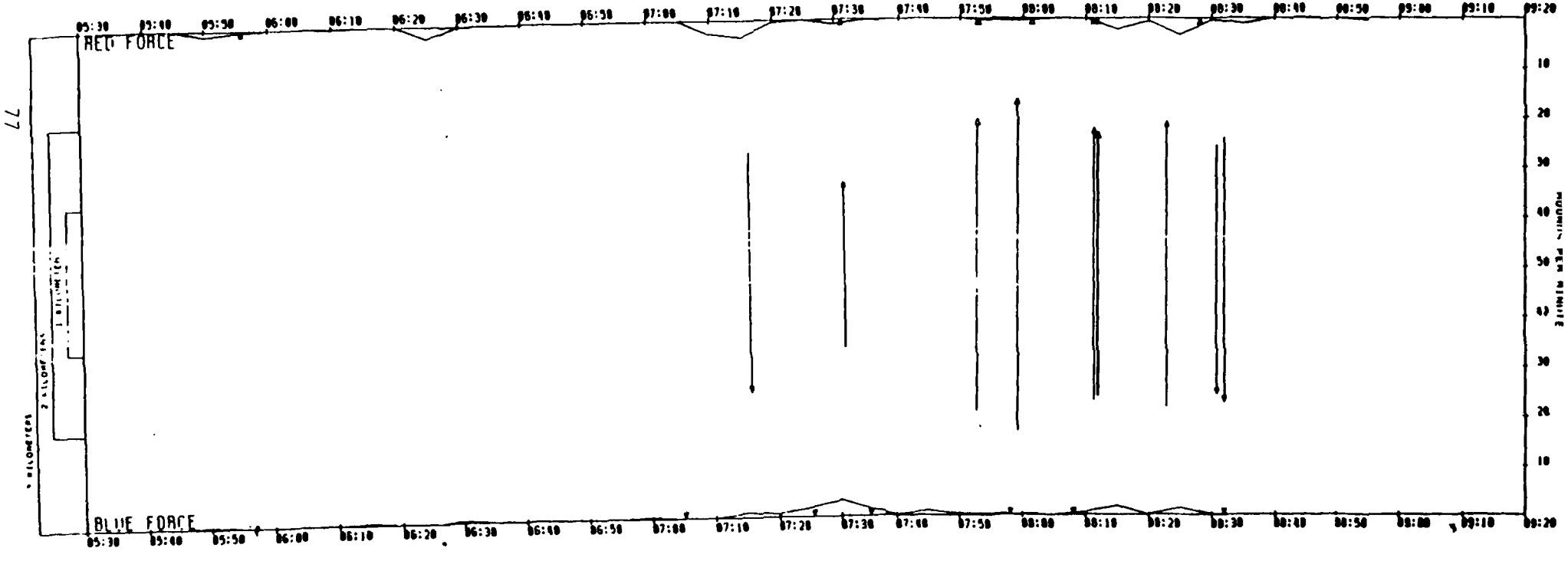
TEAM A

FIRING ACTIVITY CHART



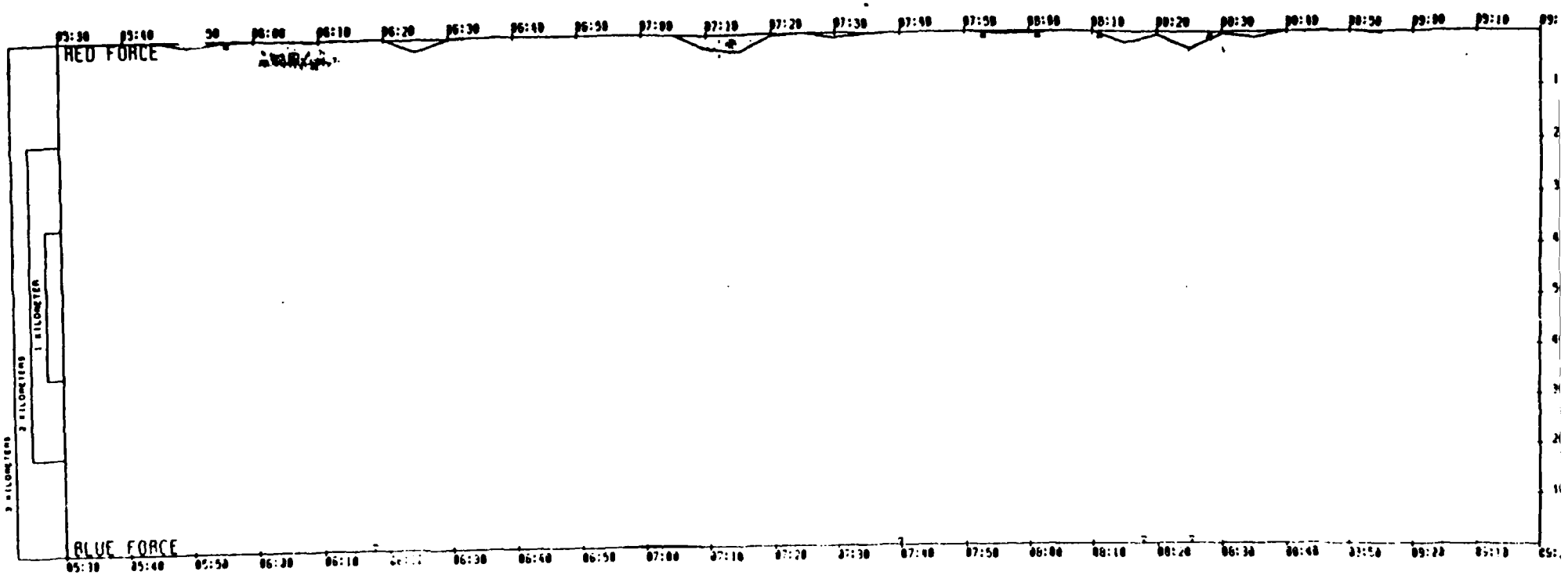
TEAM B

FIRING ACTIVITY CHART



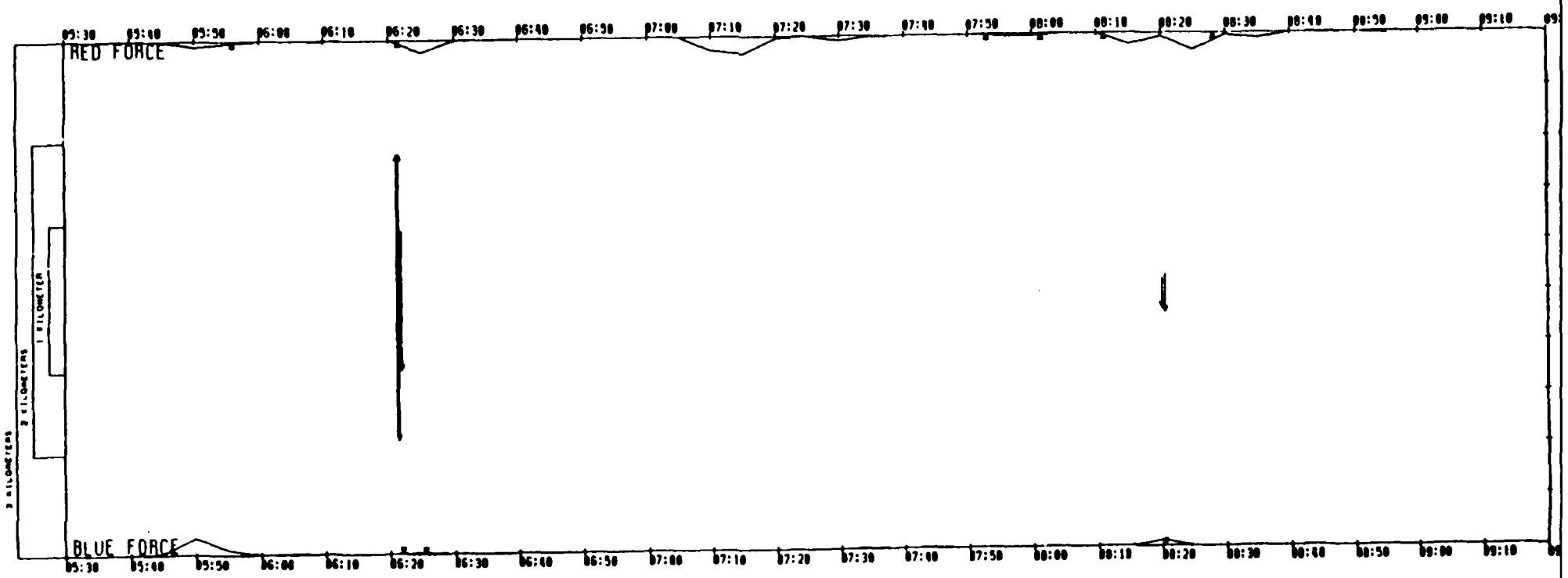
TEAM C

FIRING ACTIVITY CHART



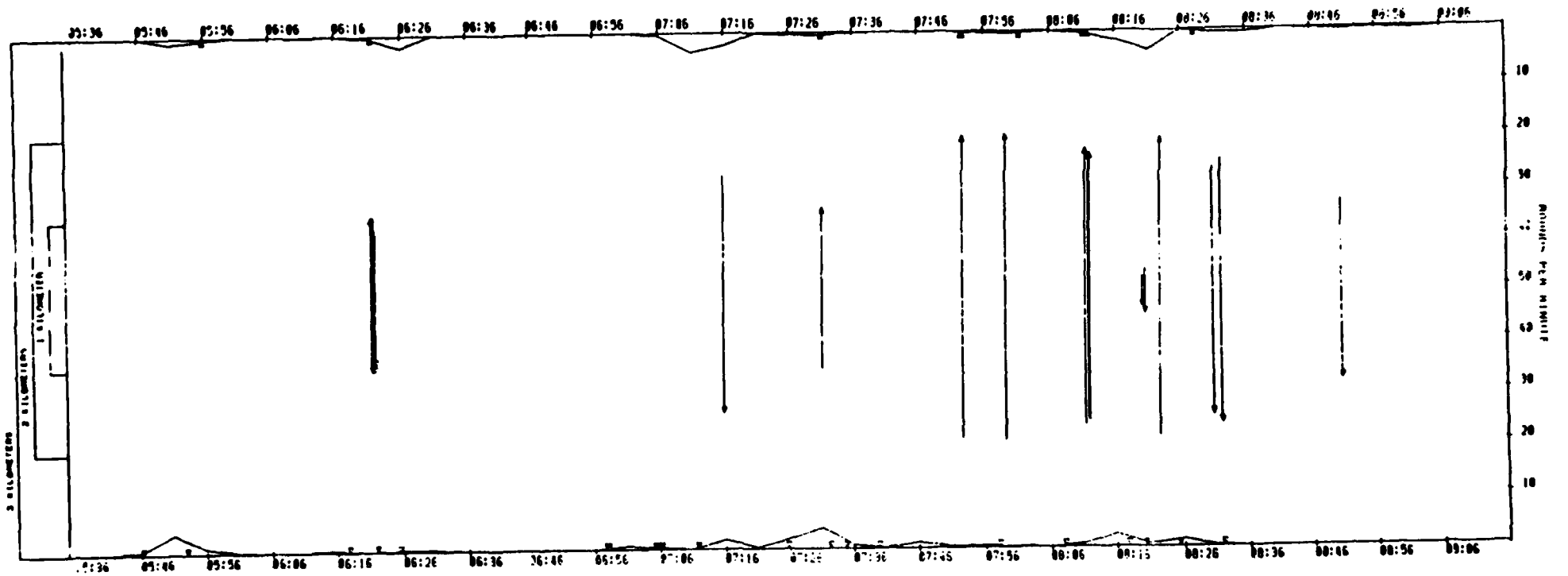
TEAM D

FIRING ACTIVITY CHART



TASK FORCE

FIRING ACTIVITY CHART



DE ANZA EXTRACT

PHOTOGRAPHS

SITUATION
FIRST PHOTO 0736
SECOND PHOTO 0841

TAKE HOME PACKAGE EXTRACT

TASK FORCE COMMENTS

Task Force Mission Statement/Commander's Concept

The Armor task force conducted a deliberate attack 160500 Jun 86 to seize Objectives FOX and SNAKE. The task force organized with two tank teams and two mech teams, with an available combat power of twenty-two tanks, six TOW weapon systems, seventeen DRAGON weapon systems, and eighty-four infantry soldiers.

As Team B, Team D, and the anti-tank platoon overwatch, Team A and Team C would seize Objective FOX. The task force would then conduct a night attack to seize Objective SNAKE. From Objective FOX, the task force would attack on two axes. Team B, followed by Team A, would attack along Axis Shoot. Team D, followed by Team C, would attack along Axis Cut. As the two tank teams and the anti-tank platoon suppress the objective, Team A and Team C would assault.

Summary of Mission Execution

The task force was facing an OPFOR MRC (+) with an available combat power of four T-72s and twelve BMPs.

By 0500, the task force was moving towards the LD. The task force attacked down its two axes, and by 0645 was poised to assault Objective FOX. Fifteen minutes later, task force elements were in Objective FOX and were halted by an OPFOR obstacle. After maneuvering to overcome that obstacle, task force elements pushed onto the center of the objective. At change of mission, the majority of the remaining combat power of the task force was on and near Objective FOX. The task force had two tanks and three ITVs remaining. The OPFOR had one tank and four BMPs left on the battlefield.

Intelligence

Scouts moved down both axes in column formation; no route recon was conducted. Scouts missed the objective.

Maneuver

The task force conducted a deliberate attack to seize and secure an objective area occupied by a Motorized Rifle Company. The task force movement from its tactical assembly area to the line of departure was conducted without difficulty and the task force crossed the LD

on schedule in the designated formation with effective command and control. Movement from the LD to PL JUMP continued to be effective with adequate dispersion observed throughout the task force. Problems for the task force occurred in the objective area when it encountered the enemy obstacle network. The scout platoon did not position itself adequately to provide observation and information of enemy dispositions; therefore, the task force engaged the enemy with insufficient intelligence. The advance of the task force stalled at the enemy obstacles while breaching operations were initiated. Actions by teams as they encountered those obstacles were slow and unrehearsed, numerous vehicles and soldiers were lost to effective enemy indirect and direct fires. The use of the AT platoon to provide long range overwatch was ineffective as the platoon was out of position, unable to communicate, and subsequently destroyed to indirect fires. The task force destroyed all the enemy in the objective area utilizing individual tank and platoon fire and maneuver. The task force secured its objective but insufficient strength and command and control forward for it to continue its mission.

Command and Control

The task force orders process improved significantly for this mission. A task force order was issued early and planning and preparation time available to the teams was sufficient. Improvement in the quality and detail of team orders was also observed., While the task force movement to the objective area was controlled and progressed as planned, the command and control of the task force deteriorated rapidly once contact with the enemy occurred. The commander was unable to see the battle from his location and reporting from subordinate elements was insufficient. Team commanders failed to communicate laterally with each other and fought the enemy independently. The task force command net was not used to control the fire and movement of the task force and traffic on this net was confined to limited reporting and calls for indirect fire.

Fire Support

The FSO's planning was adequate. He planned fires along the axis and to the flanks of the task force. Groups of targets were planned on and beyond the objective to isolate it. Exceptionally good use was made of the fire support execution matrix. Mortars interrupted to support the task force, but were not in position to support. CAS was ineffective.

COMPANY TEAM COMMENTS

TEAM A

- The operations order format showed much improvement, to include the implementation and distribution of company level graphic overlays.

- Much emphasis was placed on DRAGON and VIPER gunnery as well as preparation to fire checks. No rehearsals were conducted for such drills as breaching obstacles or actions on combat.

- Reaction to air attack was very good until the unit lost control of the STINGER gunner. Reaction to artillery was fair and was a critical factor while the unit remained stationary for long periods of time waiting for orders to move. The unit was hit with a total of 1,945 rounds of enemy artillery.

- The unit lost many personnel through attrition before several got on the ground near an obstacle and enemy dismounted infantrymen. A short fire fight ensued, with casualties on both sides of the obstacle.

COMPANY TEAM COMMENTS

TEAM B

- An operations order was given to the orders group in an expeditious manner. The operations order followed the five paragraph format. In attendance were all platoon leaders and attachments.
- Limited rehearsals and actions upon contact were conducted prior to the operations starting.
- When contact was made the infantry was not moved fast enough to assist in developing the situation.
- Assault on the objective was weak without really setting down a base of fire and maneuvering against the OPFOR positions.

COMPANY TEAM COMMENTS

TEAM C

- The commander issued a good OPORD. His plan was good. Fire support plan supported the commander's plan. The commander talked through his plan so that all his subordinates understood it. Unfortunately, OPORDS were not given at the squad level.

- A good route recon to the line of departure was done by the commander. The rest of the preparation for this mission was not up to this good start. The linkup area for movement was not marked, causing some confusion at move out time.

- Precombat checks also suffered a relapse. No precombat checks were done on 50 caliber machineguns resulting in 50s going into battle without laser transmitters. No system checks and improper storage limited AT weapon readiness.

- No rehearsals were conducted to support this operation.

- Initial line up to move out was slow (see comment on marking linkup area.) Adding to the confusion, BLUE platoon leader fell asleep at this critical point. Attached tank platoon tanks moved out to fast. Team commander was able to maintain control at this time. Movement through Whale Gap was disorganized and was not according to task force order.

- After LD, tactical dispersion, movements, and formations used were excellent. Command and control remained good. Team reacted very well to indirect fires and to CAS. Reaction to mines was not good. Fire and maneuver was fair, had room for improvements.

COMPANY TEAM COMMENTS

TEAM D

- The analysis of the mission took into consideration the factors of METT-T. When the unit commander analyzed the mission, he fully understood his commander's intent and what part eh company/team would play in the overall plan. The commander fully understood enemy defensive doctrine, he was able to wargame and template where the enemy would defend and the types of weapon systems employed. The commander intelligently understood the capabilities and limitations of his own troops. And finally, he understood the value of effective time management in the execution of the mission.

- The operations order was developed from all available data. It was complete in content and included an execution matrix and operations overlay.

- The operations order was issued in a timely manner to all subordinates. The FIST presented a fire support and target list.

- Pre-combat inspections were conducted prior to movement. All weapon systems were boresighted and zeroed, small arms were test fired, ammunition was uploaded, and vehicles were fueled.

- Effective initial coordination was made with combat support assets from within the task force. Flank unit coordination was also affected.

- The unit crossed the line of departure at the appointed time and the right place. Initial movement was well controlled with limited visibility marking being used to aid in command and control. The unit moved in the appropriate formation with adequate dispersion between vehicles. There was orientation on the enemy and air guards were posted.

- The unit assumed its overwatch role at 1500 meters from the objective. Overwatching fires were ineffective at suppressing enemy gunners.

- When ordered to conduct the assault, the unit maneuvered to avoid potential kill zones rapidly into the objective.

- Upon reaching the objective, the unit destroyed six enemy fighting positions, vehicles and two HIND helicopters. During the assault, artillery fires were carefully and effectively used to isolate the battlefield.

BATTLE DAMAGE ASSESSMENTS AND STATISTICS

TASK FORCE PERSONNEL LOSSES (KIA/WIA)

UNIT	CDR	XO	PLT LDR	PLT SGT	SQD LDR	TK CDR	TOTAL PERSONNEL
TEAM A	0/1	0/1	0/3	0/2	1/2	0/1	14/29
TEAM B	0/1	0/1	0/1	1/2	1/1	0/3	13/20
TEAM C	—	—	1/0	1/0	—	—	7/17
TEAM D	—	—	0/3	0/2	0/1	0/2	6/28
TF HQ	—	—	1/0	0/1	—	—	4/14

TASK FORCE VEHICLE LOSSES

	TANK		APC		TOW	
	START	LOST	START	LOST	START	LOST
TEAM A	3	3	10	4		
TEAM B	8	8	3	3		
TEAM C	2	2	12	4		
TEAM D	7	7	3	0		
TF HQ	2	0	1	1	6	3

TASK FORCE LOSSES

SYSTEM	START	LOST
TANK	22	20
M113	29	14
TOW	6	3
MORTAR	6	0
VULCAN	3	3
CAS	10	8 (1-TF ARTY)

OPFOR LOSSES

SYSTEM	START	LOST
T-72	4	3
BMP	12	8
SA-14	3	0
MTLB	2	1
ZSU-23-4	1	1
AVN	8	7
HIND	4	4
INFANTRY	43	10

COMMUNICATION TAPE EXTRACT

COMMUNICATION TAPE EXTRACT

Task Force Command Net
0705 - 0800

CALL SIGN IDENTIFICATION

November 81 - Task Force Commander	**ALPHA - Team A**
November 97 - S-3	**BRAVO - Team B**
November 18 - S-2	**DELTA - Team D**
November 56 - Task Force FSO	**FOXTROT - Team C**
November 23 - Task Force ALO	

Bravo, Bravo. November.

Get to the head of the column.

Enemy Air! Enemy Air! Enemy Air!

November 81. November 48.

81.

48. The 201 has been hit, probably by persistent agent vicinity Papa Lima Run.

Roger, let's get them decontaminated.

Roger.

Alpha, Alpha, this is November.

This is Alpha.

Roger, Sitrep. Are you going to get your infantry out there?

Roger. Pull up close behind him so you can get your infantry out if you have to.

Roger.

18, 18, this is 97.

You want one eight or eight one?

I want one eight. 18, 18, this is 97.

COMMUNICATION TAPE EXTRACT

Come on Alpha. Let's get those infantry out. Let's go.

18, 18. 97 over.

Let's go!

Alpha, Alpha. November. SITREP.

This is Alpha. We're engaging one T-72 up on the hill with the dismounts.

Roger. You got them dismounted already?

This is Alpha. We're swinging around now to dismount.

Roger. You need any more help up there?

I don't think so. We just got to swing these people around.

Roger. Move your people around.

81, this is 56. We could call some artillery on top of those guys.

Roger. Alpha, call some artillery. Get your FIST to work up an artillery plot and we'll call it on top of them.

Roger.

This is 56. You can relay right through me.

Delta, Delta. This is November.

Delta, Delta. SITREP.

This is Delta.

Try to maneuver around to your right, right now and try to support the Delta team. Break. It looks like we have pretty good positions to bring fire on the T-72, over.

Roger.

Roger. Let's kill him!

81. 23.

81.

(Garbled reference to target)

Roger, let me get a grid. Let me get a grid from Alpha and I'll pass it to you.

Roger.

COMMUNICATION TAPE EXTRACT

The TOC! The TOC!

Roger. OK, get decontaminated.

(Muffled)

Has the ALOC been hit? I think they've already been hit. Alright now, you've got to take control of the battle and pass that information on to higher.

(Muffled)

Roger. We got one BMP and one Sagger team destroyed vicinity 364889. A BMP and a Sagger team. Right now the Alpha element is engaging a T-72 with some dismounts.

Alpha, Alpha, this is November.

Alpha, Alpha. November.

Delta, Delta. November.

Delta, Delta. November.

81 this is 23.

This is 81.

Roger. We got fighters due in five minutes (garbled).

Roger. 56 you got artillery going in at that grid?

It just got shot. DPCIN on dismounted infantry.

(Garbled)

(Garbled)

Roger. Which ACA is that.

Foxtrot, Romeo, Alpha, November.

Roger. You got that 23?

CAS → Roger. **Let me confirm that grid. 378910?**

Roger. 378910.

Hind-D due west of formation! Enemy Air! Enemy Air! Engage him!

OP 2 hilltop, over.

COMMUNICATION TAPE EXTRACT

Roger. OP 2.

He's gone behind OP 2 complex at this time, over.

I got some ADA guys on the ground ready to engage him.

Alpha, Alpha. This is November.

Alpha, Alpha. November.

This is Alpha.

SITREP, over.

I'm swinging my tanks around to the left over there where the Delta tanks have the enemy.

OK. Is the enemy killed or what?

I'm trying to find that out.

Delta, Delta. This is Alpha.

Delta.

There was a Delta tank by where the enemy was. *Did you kill him, over?*

Roger. One BMP and one Sagger team, over.

What about the T-72? Alpha, did you see a T-72?

Roger. I thought they reported a tank.

November. This is Alpha.

November.

Killed the BMP, over.

Roger. *Let's keep them moving.* Let's go.

Roger.

81, 23.

81.

Is the OPFOR on the other side of this ridgeline or what?

I think most of them are, yea.

COMMUNICATION TAPE EXTRACT

(Garbled)

Not right now, but they will be in a few minutes.

Roger that. I'm going to bring the fighters in on the other side of the ridgeline.

Roger, go ahead. How long will it be? How long will it be before they actually put steel on target?

Roger. Is ACA in effect?

YES! ACA is in effect!

Give them about three minutes.

Get them in there. Hurry up. We're going to cross the ridge pretty quick.

Roger that.

I think he wants you to disconnect that system.

(O/C net override)

Roger, I got four BMPs, over.

Roger. What got them?

Three back there I reported to artillery. One up here where we engaged the enemy, over.

Roger, are you moving at this time?

Roger, over.

Is your infantry back up mounted?

They're doing that now.

Roger. Let's move out now. Let's go.

Roger. We should be setting up here in overwatch shortly.

Roger. Delta, Delta. This is November.

This is Delta. I've got overwatch on the knoll now. I'm pushing through an element now over to the left.

OK. Let me know when they cross that ridgeline.

They've got about 700 more meters before they do that.

Enemy Air! Enemy Air! Hind-D to the north by OP 2, over.

COMMUNICATION TAPE EXTRACT

Roger. Hind-D by OP 2. Hind-D by OP 2.

Let's get that air in here. Come on!

November, this is Alpha.

Delta.

Roger. That BMP and the dismounted may very be part of their security force. Let's be careful the rest way in front of you.

(Garbled reference to ACA)

56, can you fire it now?

23, 56.

They're supposed to be coming out of the north.

Roger. There they are now.

23, they're exactly ass-backwards. They got it turned around.

Roger that.

We're now going to get into their main defensive belt up here, what they got of it. So keep a sharp eye.

(Garbled)

Negative, negative. How much on station time to they have?

They'll over about seven more minutes.

How about that Hind-D? Can an A-10 take that out?

That's a negative on the air out here.

Alpha, Alpha. You got a grid we can use the air on?

Where do you want it? I don't have any enemy contact, over.

You got incoming now. You got to keep on moving. Delta, keep it moving.

Delta and Alpha, you got incoming. You're going to have to keep on moving.

(Garbled) I got two T-72s. I'm trying to get a grid now.

Roger. 23, monitor this grid.

23, 23. 81.

COMMUNICATION TAPE EXTRACT

23, go.

Roger, pay attention. I'm going to get a grid here in a minute.

Delta and Alpha. You got to move. The artillery is coming in on top of you.

(Garble net override)

Alpha, get me an approximate grid. Let's go!

Roger, wait.

Delta and Alpha. You're going to have to move! Go forward!

Roger. Grid 3062. Correction 368.

Roger. I got 368. What's the rest of it?

882, over.

23, did you get that? 368882.

368882. Good copy.

Roger. T-72s. Get them in there. 56, did you monitor grid?

56, Roger.

81, this is 97.

81.

Roger, my gunner just killed the Hind-D. He's in the north with the light blinking.

Roger.

23 is ACA planned again? Is ACA Fred?

23, 23. ACA Fred.

56, 23. Implement Fran and Juliet. Fran and Juliet ACA.

Negative on Fran and Juliet. Stand-by. Break. I can put Juliet in but you won't get the artillery fire.

Let's just use Fran. Use Fran.

Be advised the grid coordinates are for friendly ACA.

Roger.

COMMUNICATION TAPE EXTRACT

23, can you screen or not?

That's a negative. If you give Juliet and Fran we can do it.

Break. (Garbled)

Break, break. Alpha, Alpha. Delta, Delta. This is November. You got to move through the artillery. You got to move through it. You got your tanks parked in the rear standing still. Now move it through.

Roger, we're policed up here in the wadis and our tanks can't move there. We're going to have to go over to the right, over.

Roger, Delta did you monitor?

This is Delta, roger. If I move any more I'll go right in their kill zone.

Roger. Well what are you going to do up there?

I've got an overwatch element. I've got the other element trying to maneuver to the right to the dug-in T-72 positions, over.

Roger. You got your infantry up there. Use them!

Roger.

Alpha, can you move your rear tanks up so they don't get hit anymore.

23. 56. AC Juliet. Let me know when they're clearing.

56, say again.

I'm putting Juliet in. Let me know when they're clear.

23.

23, go.

Let me know when they leave the IP.

Roger that. They're leaving at this time. I'll call you when they leave the IP.

Alpha, Alpha. This is November.

November, this is Alpha.

You got three tanks back here. I guess they're shooting at something? I guess that's what they're doing. OK.

Bravo, are those your tanks or are those Alpha's?

Those are my tanks. Oh wait. I got one with a hit. I got to find out why.

COMMUNICATION TAPE EXTRACT

You're talking about the wrong tanks. I'm back on the left.

Those aren't my tanks.

Roger. Alpha, you got some contact on your left rear. Your left rear. Your overwatch element.

That's affirmative.

Alpha, I need to know what's going on in your rear back here.

Bravo, Bravo. This is November.

Bravo. November.

November, November. This is Bravo.

Roger. You need to get up on that ridgeline up in front of you to provide some overwatch. I think I see one of your tanks up there.

Roger.

A-10s departing and coming in now from the north.

Alpha, Alpha. November.

November, this is Alpha.

Roger. Did you kill something on your left rear?

That's A-10 on those T-72s.

Delta, Delta. This is November.

Alpha did you see all those green stars come up? That's enemy gunners. Enemy gunners. Identify where they are! Did you see it?

(Net override)

81. 23.

81.

Roger. Could you talk to Alpha, Alpha or Delta or whoever that is and tell them those A-10s are coming in on the tanks.

Roger, I'm trying to. Delta, Delta. This is November.

This is Delta.

Roger.

COMMUNICATION TAPE EXTRACT

Those A-10s up there doing you any good up there?

Affirmative. They were right on, over.

23 copy.

Bring back in again 23. This time kill them.

23. 56. Stand by. I'm going to prep the area. Then bring them back in.

Roger that.

23 Roger?

Roger. I copy.

OK 23, let me know when they're ready to go back in.

November. This is Foxtrot 81.

Roger. Foxtrot is niner, niner, niner. I am taking over.

Roger. What got him.

Artillery.

Roger.

Enemy Air! Enemy Air! Inbound.

23, you got those fighters coming in yet?

Be advised we got red air coming at this time. We got to hold them at the IP. They might run out of flight time.

Enemy air coming in from the west. West and east.

81. 23.

81.

Be advised the fighters are returning to base.

You got any more coming?

Affirmative. We've scrambled some more. ETA is unknown at this time.

Roger. Delta, Delta. This is November.

Delta, Delta. November.

COMMUNICATION TAPE EXTRACT

Enemy Air! Enemy Air! Enemy Air!

November, November. This is Delta.

This is November.

Roger. We got one BMP and tow T-72s up here. Break. Grid 362, correction 366879. I've got my dismounts on the ground trying to maneuver on them, over.

Close to them?

That's affirmative.

Roger. Have Delta lay down a good base of fire up there.

Alpha, Alpha. November.

November, this is Alpha.

SITREP.

I'm coming up on the left of Delta now. I'm overwatching Delta.

Roger.

Foxtrot 18, Foxtrot 18. This is November. SITREP.

November 81. Charlie 48.

This is November, over.

48. You got two T-72s and a BMP vicinity OP 1 chasing a 113, over.

Roger. Roger.

Foxtrot 81. Foxtrot 81. This is November 81.

97, 97. This is 81.

97, 81.

97, 97. 81.

This is 97, over.

Did you see the BMP and two tanks chasing the APC over by OP 1?

Negative. We are observing that way now unless its on the west side. We are observing on the north and the east, over.

COMMUNICATION TAPE EXTRACT

Roger.

Bravo, Bravo. November.

Bravo.

Move your element up. Move your element up.

Delta, Delta. This is 97.

Have you lost any of your tanks yet?

Negative, over.

Roger, good. Use the infantry and keep them calm up there.

Right now we're trying to maneuver to the right. Right now lost my 301s (?) the infantry dismounts. Five dismounted troops up here.

You say you have five-only five, over?

Foxtrot, Foxtrot. This is November.

Foxtrot, Foxtrot. November.

Foxtrot 81, this is November.

97.

81. 56.

81.

I've got the Foxtrot FIST with me. Break. If the commander can see anything, please relay.

Roger.

Charlie fired isolation group 45B (garbled) the objective to isolate

Roger. Delta, Delta. This is November.

This is Delta.

Roger. What's going on?

The dismount on the ground are moving behind the BMP. I'm trying to talk to my blue element.

Alpha, Alpha. November.

Alpha, Alpha. November.

COMMUNICATION TAPE EXTRACT

Alpha.

SITREP.

I'm overwatching Delta, over.

Roger. Your people are too bunched up. Get them spread out.

Acknowledge.

This is Alpha. That's not me. That's Delta, over.

Alpha this is 97. Why can't you maneuver around behind that stuff that's got Delta screwed up?

Alpha can you maneuver around behind that?

This is Alpha. Say again, over.

Can you maneuver around behind, behind, correction, in front of the Delta element and behind the enemy? To get behind him?

This is Alpha. (Garbled) behind the enemy positions.

Negative. You got to go up forward, then around behind the enemy. Don't go in front of Delta.

Roger.

Can you do that?

I have no contact - no visual at this time, over.

Then push forward a little bit more so you can go.

Push forward a little more Alpha, so you can come in contact with him.

(Net override)

18, 18, 18. This is 97.

Thunder 6, Thunder 6. This is Demon Crew 1, over.

Thunder 6.

This is Thunder 6, over.

Demon, this is Thunder.

This is Demon.

What do you want?

COMMUNICATION TAPE EXTRACT

November 18, November 18. This is November 97.

This is 18.

Have you been tracking the grids on these T-72s? I'd like to get your opinion on whether we've found their southern flank, over.

(Garbled) - November 18 is the S-2 in MOPP-4 at the TOC?

Roger. Delta, Delta do you have a grid on the T-72s?

Roger, I already gave you that grid. Wait.

November. This is Delta.

November.

Roger, 56 spotter reporting whole MRC. Break. Wait.

18, 18. 97.

This is 18, over.

Plot that grid to be 833 correction 383880. Two T-72s.

This is 18. Roger. That is the furthest force we've got at the 88 grid line, right?

(Garbled)

Being engaged now. Looks like BMPs dug in. About four of them, over.

Give me a grid!

Roger, wait.

81, 56. If he could back off I have the Fox Mikes available.

Start moving up. I'm about 250 meters to your left.

Delta, Delta. Say again. 362, then what, over?

Two BMPs and troop. Grid 362882, over.

Roger. 362882. Did you get that. Did you get that 26?

Break. 97 this is 56. If you can back off, I shell them with everything I got, over.

Delta, Delta. This is November.

This is Delta, over.

COMMUNICATION TAPE EXTRACT

Roger. Could you back your guys off? We're going to fire danger close.

Roger, wait.

November, this is Foxtrot.

This is November.

Roger. I got (muffled)

Say again. over.

All clear. All clear.

Foxtrot, this is November.

This is Foxtrot.

Roger. You're all clear, all clear.

Roger out.

Foxtrot, don't leave this net. Don't leave this net.

Roger.

November. November. This is - correction, Delta, Delta. This is November.

This is Delta. Over.

Roger. Did you get them out of there? Can we fire that mission?

I'm pulling back now.

Alpha, Alpha. November.

November, this is Alpha.

SITREP.

Roger. (Garbled) Got a T-72 around Check-point six. We're engaging him, over.

Roger. Let's get him.

We also got a minefield up here in front of us. I'm trying to find a bypass, over.

Roger, be careful you don't too (garbled).

Bravo, Bravo. This is November. Hold it up! Hold it up!

COMMUNICATION TAPE EXTRACT

November, this is Delta. Shoot arty on that grid. I got my guys back.

56, 56. This is 81. Put arty on that grid. 362882 - Now!

Roger. Doing it.

Fire away!

Bravo, Bravo. November.

Bravo, Bravo. November.

Bravo, Bravo. November.

56. Shot over.

Roger. Shot over.

Bravo, Bravo. November.

Delta, you can look for the fire markers. If it's not on target, adjust it.

Roger. Looks like its on.

Bravo, Bravo. You got a bad guy up on the hill to your right front! Do you see his signature?

81. 23.

This is 81.

Be advised we have fighters on station at this time. Could you give me some grids please.

Roger. We got a hell of a lot of artillery going in on grid 362882. 362882. Somewhere in that vicinity as soon as the artillery lifts, they can go after them. 362882.

81. 18.

This is 81.

Roger. I got a (garbled) report from our northern sector. Break. There are two BMPs at grid 394965 in the vicinity of OP 2, over.

Enemy air! Enemy air! Coming in from the east, going west.

Bravo, Bravo! Engage enemy air! Engage enemy air!

Bravo, Bravo. November.

Bravo, Bravo. November.

COMMUNICATION TAPE EXTRACT

November, November. This is Bravo.

Roger. Engage that enemy air! Get your people off that fucking hill!

Roger, Roger.

Delta, Delta. November.

This is Delta.

Roger. How's that arty doing?

I don't know. It looks like its going into that (garbled). Break.

Roger. Check your grid.

56, 56. This is 18. 81.

Roger. 352882. Give me arty there. I know there's two BMPs in the open there, over.

Say again grid.

352882. 352882.

Is that arty that just came in ours?

Roger. We just fired it at 362882.

I had arty impact on my position and I know I'm not there.

Roger. Alright, fire a mission at 352882.

Wilco.

Delta, Delta. Is your mission stopped? Is the arty complete?

Delta, Delta. November.

Delta, Delta. November.

November, November. This is Delta.

Roger. SITREP.

Roger. Right now we're engaging 22 dismounted troops and ... vicinity of previous grid I gave you, 355...

Roger. 355882.

Roger. If the Foxtrot element can get behind me, they can probably dismount and assist my crew in taking on this force, over.

COMMUNICATION TAPE EXTRACT

Roger, Foxtrot. Did you monitor?

Roger, I monitored.

Alright. Move on up there. Move on up there. Listen to him. Talk to each other. Get your dismounts out. Move on up there.

Roger. Delta you want me to come around your left or your right?

Delta, Delta. He's talking to you.

To the right, over.

Roger.

Let's go.

November, November. This is Bravo.

I'm firing on that grid now. Then I'll end it.

Roger. Bravo, this is November.

I can send a platoon forward to help clear Bravo, over.

Roger. We got some coming up now, over. Foxtrot, move them up. Let's go Foxtrot! Let's go.

Enemy air! Enemy air!

Foxtrot, Foxtrot. November.

This is Foxtrot.

Roger. Are you moving up at this time?

Foxtrot, are you moving up?

81. This is 97.

81.

Give him a minute. He's only had about 30 seconds to issue the order. Can we take that time to get that other BMP grid from 18? He's trying to give us a grid on two BMPs.

Go for it.

18, 18. 97.

Those BMPs are moving north. They went from the objective area to vicinity of OP2. Two BMPs at grid 394965, to your north. To your north.

COMMUNICATION TAPE EXTRACT

Roger. 394965.

56. 23. 56. 23.

56.

Roger. We want ACA Juliet. ACA Juliet.

Roger, we'll put it in. Let me know when to clear it. Tell me when they leave the IP, over.

Departing IP. Departing IP.

81. 23. Confirm 366882.

The grid is 352882.

I take it BMPs in the open.

BMPs dug in with troops.

97. 18.

97.

Roger. We'll be off the air for a few minutes. We got to go Decon. We'll be back.

Roger, how long?

Hard to tell. We're doing it ourselves. Could take a little while.

Roger.

Foxtrot, Foxtrot. This is Delta.

Foxtrot, Foxtrot. This is November.

This is November 60. Break.

Foxtrot, Foxtrot. This is November.

This is Foxtrot. I'm niner-niner-niner. My third Papa Lima will be taking over.

This is November 60. We'll be off the air for a few minutes while we go through Decon, over.

Alpha, Alpha. November.

We have to hold the A-10s at the IP for the red air.

This is Alpha.

COMMUNICATION TAPE EXTRACT

Roger. SITREP up there.

Roger. We got a BMP just ... just east, southeast of Uniform 6 about 500 meters. We're trying to engage. We got a T-7 ... (net goes static)

Foxtrot... (Static)

What?... (Static)

Delta, Delta. November.

SITREP... (Static)

81.

Do you have contact with 56?

56, 56. This is 81.

56.

Talk to him 23.

56, 56. 23, 23.

56, go.

Roger. Implement Juliet at this time. Fighters are inbound.

Roger. Already done. I got Juliet in.

59, 59. 81.

Off the radio. 81.

59, 59. 81

Bravo, you got to move. You can't just sit there.

81, this is 97. You calling me?

Roger. Could you get a hold of the Foxtrot element? Get them up there?

Roger. I'll call them internal.

81. 23.

81.

COMMUNICATION TAPE EXTRACT

Roger. Be advised we can't see the battlefield, so tell us whether the fighters are moving east or west or what they need to do. We can control them a little better.

Roger. You know where I am?

That's a negative.

You're supposed to follow me. I think I'm up to your left front.

Be advised we're dead.

Roger.

Delta, Delta. This is Alpha, over.

Delta, Delta. This is November.

Delta, over.

Roger. You see the infantry coming up?

Negative, over.

Roger. Can your infantry go after them?

Delta. Can your infantry go after them?

The infantry already on the ground. They're engaging now, over.

Roger. Alpha, can you give Delta any kind of help?

Delta, Delta. This is Alpha.

This is Alpha. I'm swinging to the right. If you bring them down to the left (garbled).

This is Alpha. Let me get this BMP here. I got to get a minefield clear, over.

Roger.

Enemy air.

23, 23. They're hitting the wrong target. They got to get out in front. Wrong target, 23.

Roger that. I'm trying to talk to Air Traffic at the same time. They need to move further to the south, correct? Foxtrot, Foxtrot. This is November. Get your troops dismounted and get them moving up there. Let's go!

Roger, we're moving now.

81. 23.

COMMUNICATION TAPE EXTRACT

81.

23. This is 81.

Foxtrot, Foxtrot. This is Delta, over.

Foxtrot, Foxtrot. This is Delta, over.

Foxtrot, Foxtrot. This is November.

This is Foxtrot.

Are you moving up to where Delta is?

Roger. We're dismounted now, moving in that direction.

I can't see you. I don't know where you are. How far back are you?

We're in the middle of Delta. We're taking small arms fire. We'll have to fire and maneuver up there.

Roger. Go for it! Go for it!

Foxtrot, Foxtrot. You're going to have to come up.

Foxtrot, Foxtrot. This is Delta.

Alpha, Alpha. You gone through that minefield yet?

Alpha, Alpha. November.

Alpha, you got through the minefield yet?

You're coming in awful broken. Say again.

Delta. Are you in position to overwatch this operation?

Delta, Delta. This is November.

Delta. I've been trying to switch vehicles. I just got hit.

Roger. Everybody's sitting up here and they're just picking you apart. You got to get your tanks around to the right and get that infantry to the left.

23. 56.
Already dismounted the infantry. They went on to the grid line on the flank. Trying to break victors around to the right. I just lost two 302s, over. I'm going to try to get my dismounts to take out these T-72s up here.

Roger. **Is the engineer up there?** Do you see him?

Do you see Foxtrot?

COMMUNICATION TAPE EXTRACT

Negative. I've not seen him.

56, 23. Go ahead.

Alpha, Alpha. This is November.

23, 56. Are the airplanes clear?

Roger.

He gave you a roger.

Roger. I got it!

Alpha, Alpha. This is November.

November, this is Alpha.

Roger. Have you got the minefield breached and the BMP killed yet?

We're breaching the minefield at this time. We're breaching the minefield at this time. We'll be moving shortly.

What about the BMP? Did you kill him?

Roger, over.

Alright. Now do you have anything else up in that area?

We don't observe anything else, over.

Roger. Get through that minefield so you can help the Delta element.

Roger.

Foxtrot, Foxtrot. November.

56. 23

56.

Be advised, be ready for the fighters.

Roger. Let me know when they're clearing the IP.

At this time.

Roger.

You got a Hind-D to the right front. Hind-D to the right front. To Delta's front. To Delta's front. A Hind-D.

COMMUNICATION TAPE EXTRACT

Bravo, Bravo. This is November.

Bravo, Bravo. November.

This is Bravo.

Roger. Be prepared to move up through the Alpha element. Through the Alpha element. Now, he's breaching a minefield up there so you're going to have to look for the breach when you get up there. Don't move yet, but get your forces cocked in position and get ready to go.

Roger. (Garbled)

81. 56.

81.

I have no commo with any of the 81s up there. Break. Or the 56s. You'll have to call the fires in or I'll have to get up forward.

Roger. Why don't you come up here with me?

Roger. I'm just down south of you...I'm on my way.

Roger.

Friendly air. Friendly air.

Friendly air coming in. Friendly air is coming in.

Delta, Delta. November. SITREP.

This is Delta. SITREP. Trying to maneuver wide to the right. Trying to bring them into the flank, over.

Roger, understand. What are the dismounts doing?

Delta. November. **What are the dismounts doing?**

5 KIAs and 3 WIAs. They're almost gone.

Roger. All they need is a Dragon team up there. Come on.

Roger.

Alpha, Alpha. This is November.

November, this is Alpha. Roger. We got another BMP over here to our left, left front. Break. We had a Dragon going after it. He killed the gunner on the Dragon. I'm going to sent a loader to get that Dragon and help him out and send a tank around and try to get that BMP. Force him out and get him, over.

Roger. Get him out of there and get through that fucking minefield so you can get up around the enemy!

COMMUNICATION TAPE EXTRACT

Delta, what are your vehicles doing the right side? Are they getting around?

Roger. They're going wide right now. Wide right.

Could you get me a good grid for the enemy? A good grid.

23. 56. Are you clear yet?

Where are they?

They're right in front of you.

Right. Never mind. I can see them.

They need to come more to the left. To the left more.

23 copy.

Roger. Enemy grid 342882. Three T-72s, over.

Roger! Give me a grid, damnit!

342882! Three T-72s, over.

Roger. 23 did you copy?

342882?

Roger. Three T-72s! Get them in there!

23, get them in there!

18. This is 81 Hotel.

81, 23. Be advised our fighters have to go back to the IP. They'll be reattacking from IP.

How long is that going to take?

How long is that going to take?

Four mikes. Four mikes.

Alpha, Alpha. You got through yet?

This is Alpha. Roger. We got a breach. We can get through it now. We got it marked. Marking it with green smoke. Trying to get some engineer tape on it, over.

Roger. Let's get through it up there. Watch out to your left. Try to get back down to your right behind those guys holding Delta up.

COMMUNICATION TAPE EXTRACT

Roger. I still got a BMP on my left. I've got a tank and a Dragon trying to get it out. We'll get rolling, over.

Roger. Hustle it up. We got to move. We got to move.

Roger.

23, this is 56. I'm firing on that grid. As soon as I'm finished you can come up with the birds.

23.

56. Have you shot yet?

Negative.

81. 57.

81.

57. We're almost back up. It'll be another one zero mikes.

Zero mikes for what?

We're almost through with our decon. We'll be taking back over control from the ALOC in just a few minutes.

Roger. Good work.

(Net override)

November. This is Delta.

November.

I need that Foxtrot element up here. There's about 20 dismounts with Vipers. Break. 2882. Trying to engage them now. They're engaging my victors. Break. If you can get up India you can take them out. My blue element right now has 5 KIAs and 4 WIAs and they took out one BMP. But I need some support, over.

Delta, Delta. This is 97.

I'm firing on that grid. As soon as they clear out, I'm sending the A-10s back in.

This is Delta, over.

This is 97. If you look down to your right down by OP 1, there's three 113s and a TOW moving down there. That could be Foxtrot. You told him to come around to your right, didn't you?

Roger, he told them to come around to his right.

That could be him all right. You see him down there, Delta?

This is November. Are you through the breach?

COMMUNICATION TAPE EXTRACT

Roger. We're through.

Alpha! Talk to me!

I'm engaging a T-72 right now! Wait!

Bravo, Bravo. Did you see where that breach was up there?

Foxtrot, Foxtrot. This is Delta.

I got a grid for the obstacle. I got smoke on the other side for warning.

Roger. Bravo, Bravo. This is November.

Bravo, Bravo! November!

Charlie, Charlie. Come right. Come right.

Charlie, Charlie. Come right a little bit more.

Right a little bit more. A little bit more right. More to your right, Charlie. Charlie, more to your right.

Straight ahead now! Straight ahead. Straight ahead.

Bravo, Bravo. This is November.

Alpha, Alpha. November.

November, this is Alpha.

SITREP!

Roger. Right now we have a BMP. Engaging a BMP. Break. Engaged a BMP. We engaged two BMPs and destroyed them. We're moving up, over.

Roger. Ok. Let me know what's going on up there. Don't depart the net like that. Break. Bravo, Bravo. November.

Roger. We engaged and destroyed that BMP. We're on the move.

Roger. Bravo, Bravo. November.

Bravo, Bravo...
(Net override)

Foxtrot, this is Delta, over.

Bravo, Bravo. November.

97. 60.

COMMUNICATION TAPE EXTRACT

97. 60.

Bravo. Get your people mounted up again and get through that breach up there! Get them mounted up and get through the breach!

Roger. Is the breach secure, over?

Yes, damnit! Get them up there!

Do you acknowledge?

Roger.

Hurry up! Hurry up!

56. 23.

56.

Fighters are reconstituted and we're ready to bring them back in. We need Juliet implemented.

Roger. Let me know when they leave the IP.

Departing at this time. Departing at this time.

Roger. Hold on! Can you stop them? I got a mission in progress.

Roger. We'll hold up at the IP.

81. 61.

Foxtrot, Foxtrot. This is Delta.

Bravo, Bravo. This is November. Get them mounted back up. Get them mounted back up and get them through the breach up here.

November, this is Bravo.

This is November. Get your people mounted back up and get them up through the breach. Hurry up!

Roger. I'm loading my victors now.

Roger. Hurry! You're too slow! Hurry up!

23. Are they ready to go?

Be advised that 56 is firing a mission right now. Is 342882 still good grid coordinates?

Roger. 56, are you clear?

COMMUNICATION TAPE EXTRACT

Roger. Send it in 23.

23, send the birds in now. Send them in now.

Roger. Departing IP at this time. Implement Juliet. Implement Juliet.

Roger. Implement Juliet, 56. Implement Juliet.

81, 81. 97.

81, 81. 97.

81.

I talked to Bravo. He's bringing moving his tracks up. He just dismounted and he's looking for that breach. He's waiting for his tank platoon to get there.

Roger.

This is Delta, over.

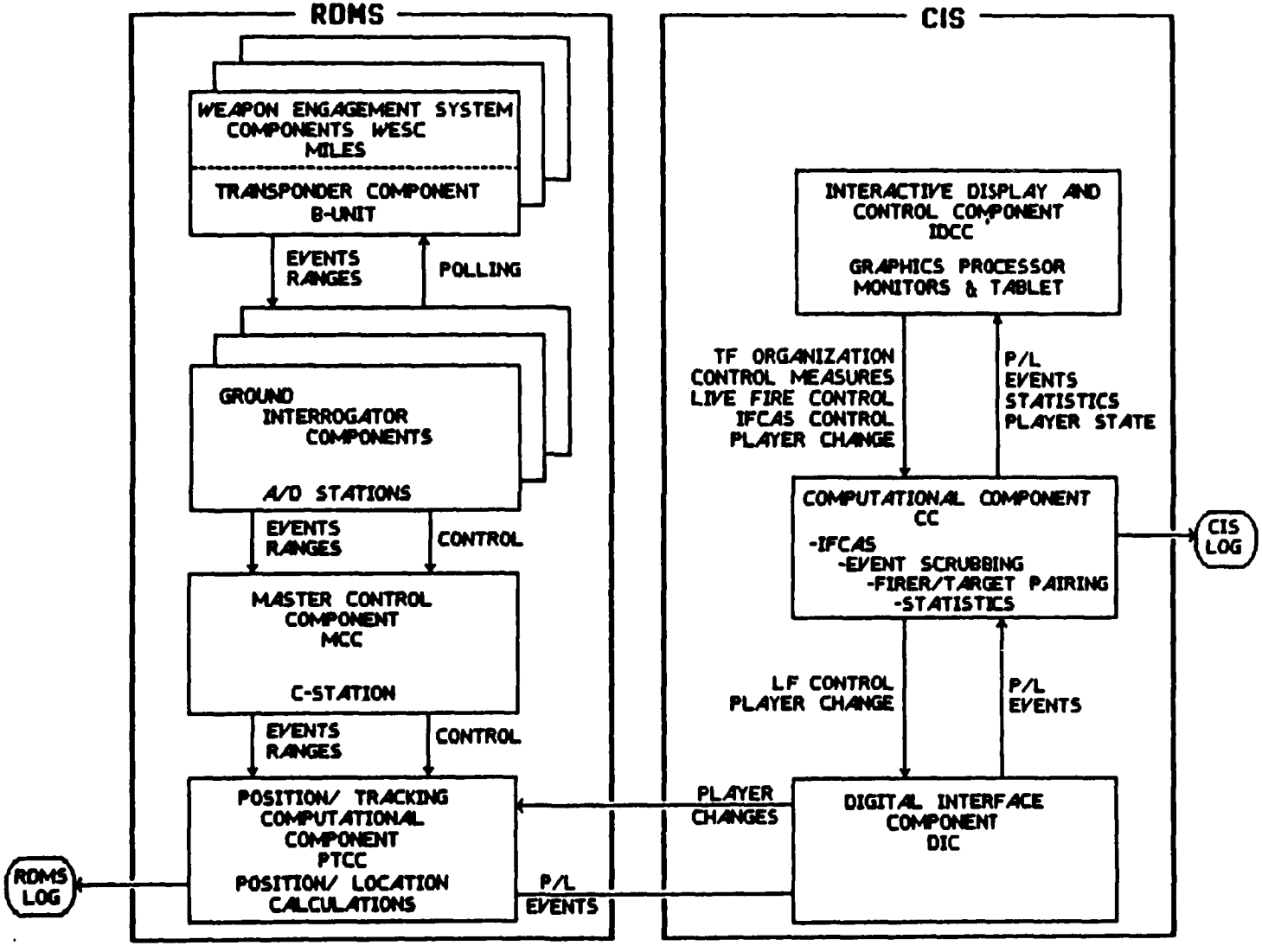
This is Delta.

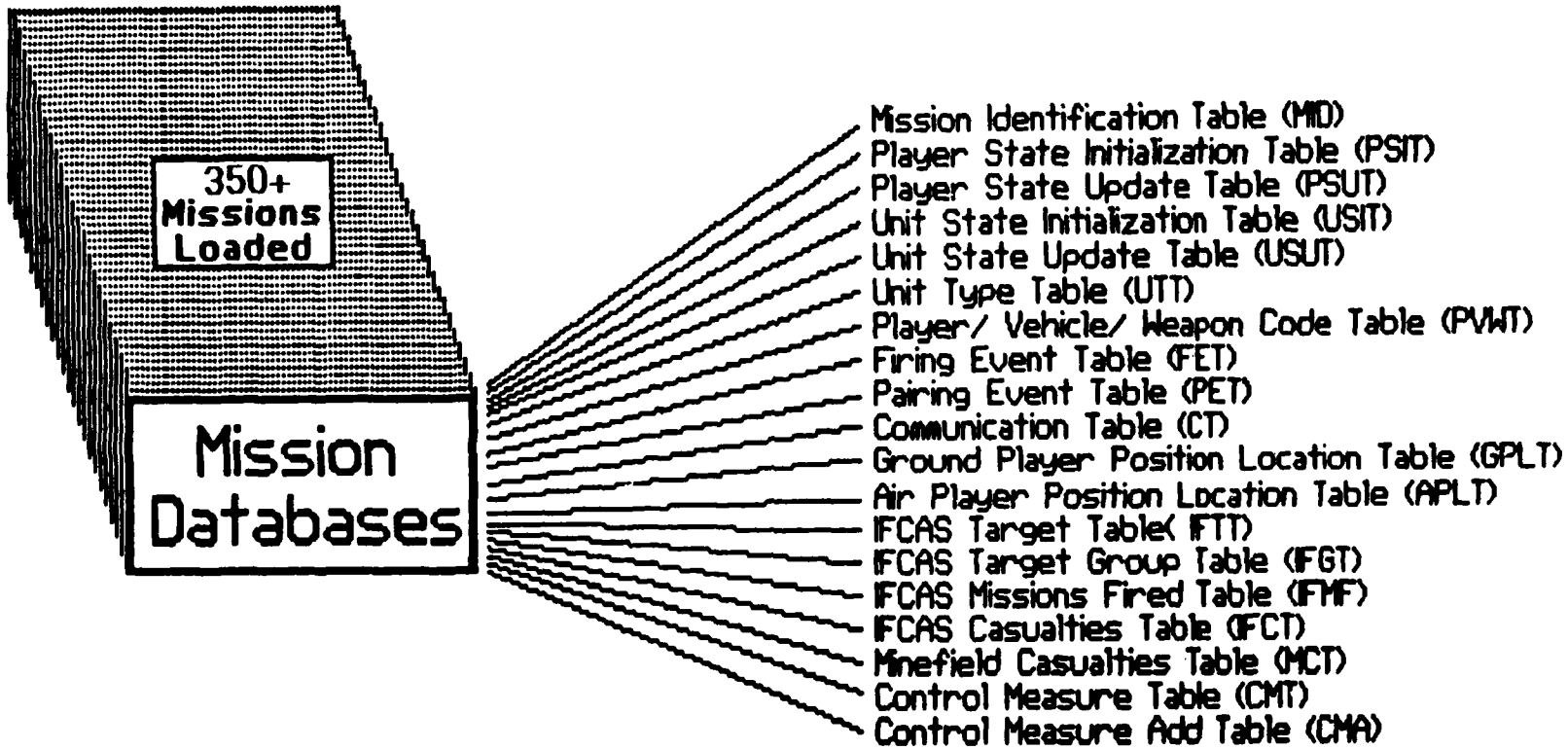
97. 64.

97. over.

64. Roger. Scouts... (net static)

DIGITAL DATABASE


RDMS
CIS
WEAPON ENGAGEMENT SYSTEM COMPONENTS WESC MILES
TRANSPONDER COMPONENT B-UNIT
EVENTS RANGES
POLLING
GROUND INTERROGATOR COMPONENTS
A/D STATIONS
EVENTS RANGES
CONTROL
MASTER CONTROL COMPONENT MCC
C-STATION
EVENTS RANGES
CONTROL
POSITION/ TRACKING COMPUTATIONAL COMPONENT PTCC
POSITION/ LOCATION CALCULATIONS
RDMS LOG
P/L EVENTS
PLAYER CHANGES
INTERACTIVE DISPLAY AND CONTROL COMPONENT IDCC
GRAPHICS PROCESSOR MONITORS & TABLET
TF ORGANIZATION
CONTROL MEASURES
LIVE FIRE CONTROL
IFCAS CONTROL
PLAYER CHANGE
P/L EVENTS
STATISTICS
PLAYER STATE
COMPUTATIONAL COMPONENT CC
-IFCAS
-EVENT SCRUBBING
-FIRER/TARGET PAIRING
-STATISTICS
CIS LOG
LF CONTROL
PLAYER CHANGE
P/L EVENTS
DIGITAL INTERFACE COMPONENT DIC


350+
Missions
Loaded
Mission
Databases
Mission Identification Table (MID)
Player State Initialization Table (PSIT)
Player State Update Table (PSUT)
Unit State Initialization Table (USIT)
Unit State Update Table (USUT)
Unit Type Table (UTT)
Player/ Vehicle/ Weapon Code Table (PVWT)
Firing Event Table (FET)
Pairing Event Table (PET)
Communication Table (CT)
Ground Player Position Location Table (GPLT)
Air Player Position Location Table (APLT)
IFCAS Target Table(IFTT)
IFCAS Target Group Table (IFGT)
IFCAS Missions Fired Table (IFMF)
IFCAS Casualties Table (IFCT)
Minefield Casualties Table (MCT)
Control Measure Table (CMT)
Control Measure Add Table (CMA)

Key Mission Database Tables

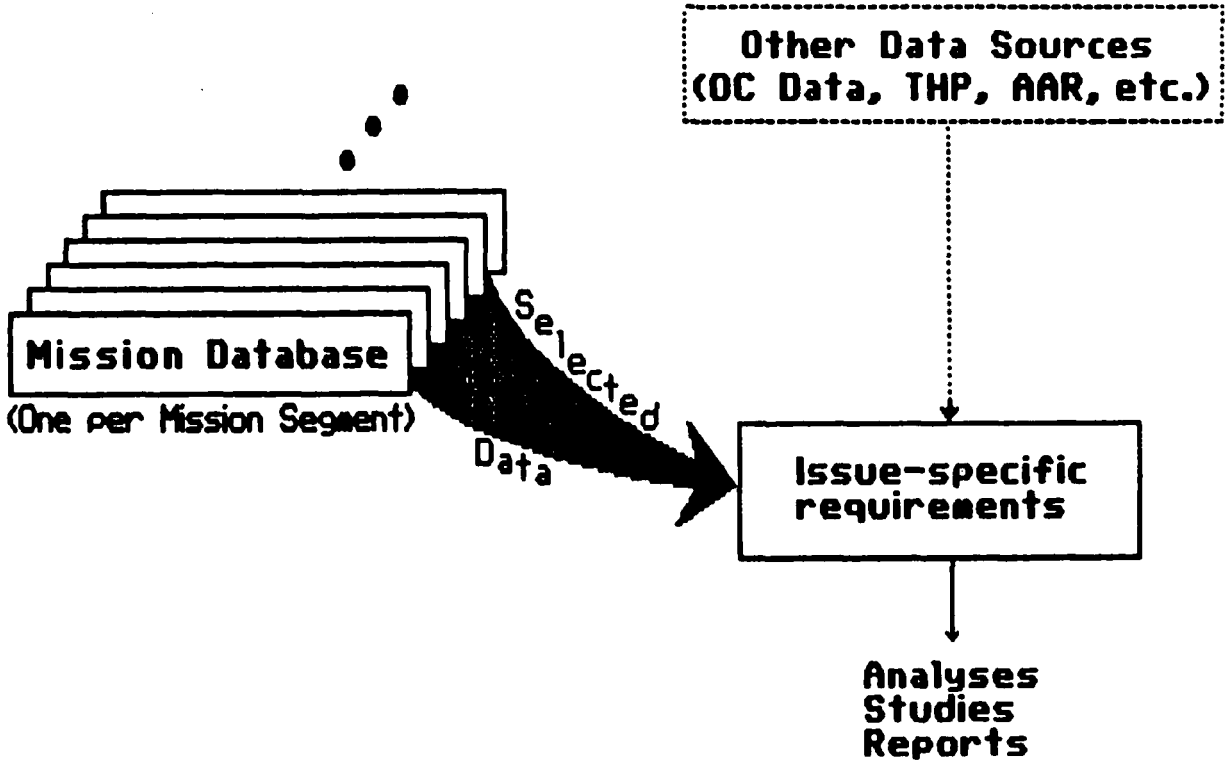
PSIT, PSUT - Player State Initialization (Update) Table
Player ID (bumper number), Unit,
Tracked status, weapon code,
vehicle type

FET - Firing event table
Time of fire event-trigger pull, player ID,
weapon code

PET - Pairing event table
Time of pair event, ID and PL of player paired,
type of pairing (NM, H, K)
[weapon type, firer ID and PL]

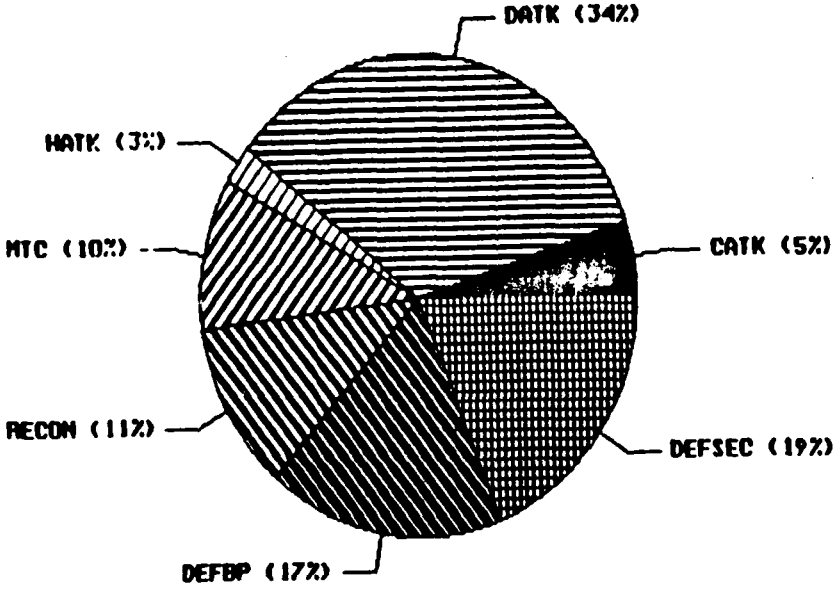
GPLT, APLT - Ground (Air) player position-location
Periodic map location of each instrumented
player (Δt=300 seconds)

PVWT - Player/Vehicle/Weapon Type Table
Allows correspondence of MILES codes with
vehicle and weapon types.

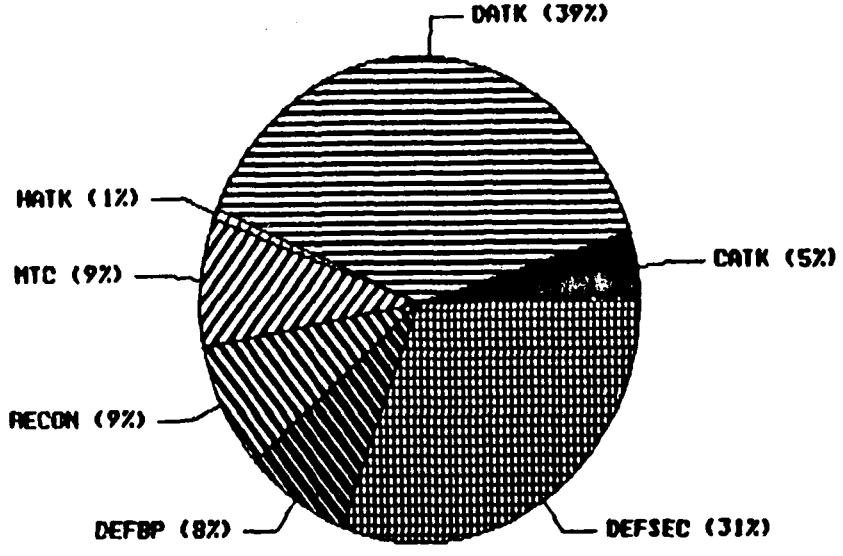

Other Data Sources
(OC Data, THP, AAR, etc.)
Mission Database
(One per Mission Segment)
Selected
Data
Issue-specific
requirements
Analyses
Studies
Reports

The Process

Mechanized Task Forces
Mission Types (N=115)



Armored Task Forces
Mission Types (N=140)



Utility

Digital Data consist mainly of tactical events and position/location :

- Fire Events (trigger pulls)
- Pairing Events (matched or not)
- Commo Events (key depressed/released)
- PL with events and every 5 minutes
- Control measures (type & location)
- Unit organization

The value in the database lies mainly in the tactical events and position/location.

Limitations

Only instrumented data or data entered by TAF personnel

Rotations from 8601-8901 are currently loaded

Instrumentation Shortfalls

- Unmatched Pairings
- Uninstrumented Players

TAF-filled tables are spotty

- Minefield Casualties (MCT)
- IFCAS Casualties (IFCT)

	FIRER	TARGET
TRACKED	X	X
NOT TRACKED		

MATCHED PAIR IF . .

Firer/Target can be matched by event time
otherwise
Fire Event +
Unmatched Pair

	FIRER	TARGET
TRACKED	X	
NOT TRACKED		X

FIRE ONLY

Fire Event whether or not a the target was hit

	FIRER	TARGET
TRACKED		X
NOT TRACKED	X	

UNMATCHED PAIR

Pair Event only -
Firer may be untracked or uninstrumented
* If RDMS data used to build Mission Database, then weapon type is available for Hits and Kills

UNMATCHED PAIR FIELDS AVAILABLE (Black on White)

PET Table	TIME	TPID	TLPN	RESULT	FPID	FLPN	FWPN *	FPAT	TX	TY	F·	F·

MATCHED PAIR - ALL FIELDS AVAILABLE

User's Guide — — INGRES

AFTERNOON SESSION:

Students will use INGRES database management system to:

1) Execute 'IQUEL" (Interactive QUEry Language) querys on mission database.

2) Answer questions about database based on querys.

3) Create data files using mission database suitable for use with SPSS or Lotus 1-2-3.

CONQUERING THE DATABASE!
"WE HAVE NOTHING TO FEAR BUT FEAR ITSELF"

- REVIEW THE DATABASE USERS' GUIDE (TAB H)
  FIRST PART DESCRIBES DATABASE CONSTRUCTION
  METHODOLOGY AND EXAMPLE QUERIES
  SECOND HALF DESCRIBES DATABASE TABLES
- LOG ON PER COMMAND AT $ ON PAGE 1
- "LPA- ZERO" NOT "LPA- O"
- RUN THE COMMAND AT THE $ ON PAGE 2
- LOAD EXAMPLE QUERIES AND COMPLETE YOUR TEST

Loading a query from disk:

1) press menu key,	[PF1]
2) select file option,	f [CR]
3) select the read option,	r [CR]
4) enter the filename:	example.1 [CR]
5) execute the query,	c [CR]
6) when finished, exit,	e [CR]
7) before loading next query, blank out the terminal screen buffer,	[PF1] b [CR]

Querys accompanying the User's Guide are provided on disk in each user area.

User Guide Example	Disk File Name
Example 4.1	Example.1
Example 4.2	Example.2
Example 4.3	Example.3
Example 4.4	Example.4
Example 4.5	Example.5
Example 4.6	Example.6
Example 4.7	Example.7
Example 4.8	Example.8
	Example.8b (report writer)

DATABASE HINTS

- TO GET WRAP AROUND ON SCREEN OUTPUT, WRITE FILE TO ‹SYS$OUTPUT›
- OUTPUT TO PRINTER = 'LPAØ';
- ‹/*...*/› DENOTES COMMENTS IN PROGRAM, DO NOT NEED TO ENTER
- ENTER EDITOR IN IQUEL BY ENTERING ‹PF1›, ‹E›, ‹CR›, C, ‹CR›
- EXIT EDITOR BY ENTERING ‹CONTROL Z›
- HIT UP-ARROW KEY TO RETRIEVE LAST ENTRY
- CLEAR SCREEN WITH ‹PF1›, ‹B›, ‹CR› BEFORE RETRIEVING ANOTHER EXAMPLE QUERY

NTC ARCHIVE RELATIONAL DATABASE

- OVER 300 BATTLES LOADED
- SELECTION CRITERIA WAS MATCHED PAIRS
  ADDITIONAL OLD MSNS CAN BE MADE ON REQUEST
- BEST SOURCE FOR UNIT FIRING ACTIVITY,
  MOVEMENT, STATUS CHANGE, ENGAGEMENT RANGE,
  AND MOBILITY/COUNTERMOBILITY DATA
- POOR SOURCE FOR TOTAL LETHALITY - SEE
  TAKE HOME PACKAGES
- QUERY LANGUAGE IS NOT DIFICULT
- CAN LOAD RESULTS INTO STATISTICS PROGRAMS

Research Note

GUIDE TO USING ARI-NTC RESEARCH DATABASE

Jack Baldwin
BDM Corporation

Mr. Michael R. McCluskey, Contracting Officer's Representative

Submitted by Howard H. McFann, Chief
Presidio of Monterey Field Unit
and
Jack H. Hiller, Director
Training Research Laboratory

Revised
July 1988

U. S. Army Research Institute for the Behavioral and Social Sciences

Statistical Package for the Social Sciences (SPSSX)

Dr. Dwight Goehring

SPSSX PRIMER

The extended Statistical Package for the Social Sciences (SPSSX) is easy to learn and use, yet very powerful. The purpose of this part of the ARI-NTC Archive Workshop is to provide an introduction to SPSSX through the use of examples. Complete documentation may be found in the SPSSX manuals available.

The first step is to write an SPSSX job. To do this use the EDT editor on the VAX (See page 2). All SPSSX statements begin with keywords. An SPSSX job consists of three parts. The first part defines the data. It gives the file to read and the names and locations of data elements. The second part, which is optional, modifies the data in some way. The third part of the SPSSX job is the procedure(s) to be performed on the data.

After creating a job file, the SPSSX program is run by typing:

```
$ SPSSX filename
```

The results will be displayed on the screen. The screen can be stopped by typing CTRL-S and restarted with CTRL-Q. Pressing CTRL-Y will abort the job. To write the output to a file, type:

```
$ SPSSX job-filename /OUTPUT= filename-for-output
```

For example:

```
$ SPSSX MEANS123.JOB /OUTPUT = MEANS123.OUT
                             = LPA0:
```

Sends output directly to printer.

When an output file is used, it can be inspected first using EDT, then if needed, printed by typing:

```
$PRINT out-filename
```

The way to learn SPSSX is (1) to use it yourself, and (2) to ask someone when you need help.

SPSSX-1

Summary of EDT

EDT is an interactive text editor that has three distinct editing modes: keypad, line, and nokeypad. Both the keypad and nokeypad modes are screen editors for use on VT100-type and VT52 terminals. (See the list of terminals that can use EDT screen modes in Appendix C of the *EDT Editor Manual*.) Line mode can be used on any type of terminal — hardcopy or screen.

The EDT Editor is available with these operating systems:

VAX/VMS ~~RSX-11M~~
~~RSTS/E~~ ~~RSX-11M-PLUS~~

With the EDT editor you can create and edit almost all types of text files. When you are editing a file, you can add or delete text, move or copy text from one place to another, save or discard your editing work.

To call up the EDT editor, you must use a system command: EDIT or EDT. (If EDT is not the standard editor on your operating system, you must include the /EDT qualifier with the EDIT command.)

Include the name of the file you want to edit on the EDIT/EDT command line.

```
$ EDIT LETTER.DAT
```

~~$ EDIT/EDT LETTER.DAT~~

```
$ EDT LETTER.DAT
```

If a file named LETTER.DAT exists in the current directory, EDT puts a copy of that file into the *MAIN* buffer in your EDT session. Then EDT displays the first line from the file on your screen or paper, followed by the line mode asterisk prompt (*). You are now ready to begin your EDT session.

If you are using EDT to create a new file called LETTER.DAT, your session starts off like this:

```
$ EDIT LETTER.DAT
Input file does not exist
[EOB]
*
```

The message Input file does not exist tells you that no text was copied to the MAIN buffer. The end of buffer mark ([EOB]) is printed in place of the first line, since there is no text to display. The next step is to insert some text in the buffer, using one of the three editing modes.

When you start your editing session, EDT's default mode is line mode. To shift to keypad mode, use the line mode CHANGE command. To shift back to line mode from keypad mode, use CTRL/Z.

To go from line mode to nokeypad mode, you must first give the SET NOKEYPAD command and then the CHANGE command. The nokeypad EX command shifts EDT from nokeypad editing back to line mode.

You can use EDT's online HELP facility any time during your editing session. The line mode HELP command supplies general information on EDT as well as details on line mode and nokeypad mode commands. The HELP command by itself provides information on using the HELP facility and a list of topics that you can get help on. For help on a specific topic, type the HELP command followed by the topic name, for example, HELP EXIT.

When you are in keypad mode, press the HELP key (PF2 on VT100-type terminals; red on VT52s). EDT displays a diagram of the keypad, a list of other keypad editing keys, and tells you to press the key you want help on.

You must use the line mode HELP command to get information on nokeypad editing. The relevant topics are HELP CHANGE, HELP CHANGE SCREEN, HELP CHANGE ENTITIES, and HELP CHANGE SUBCOMMANDS. Nokeypad command descriptions are found under the SUBCOMMANDS topic. Thus, if you want information on the BELL command, you must type HELP CHANGE SUBCOMMANDS BELL.

Keypad Mode

This example uses keypad mode to insert the sample text.

```
$ EDIT/EDT LETTER.DAT
Input file does not exist
[EOB]
*CHANGE
[EOB]



June 18, 1984

Mr. Charles R. Thurman
Director of Marketing
Energy Systems Inc.
.
.
.

CTRL/Z
*EXIT
DISK$USER:[SMITH]LETTER.DAT 50 lines
```

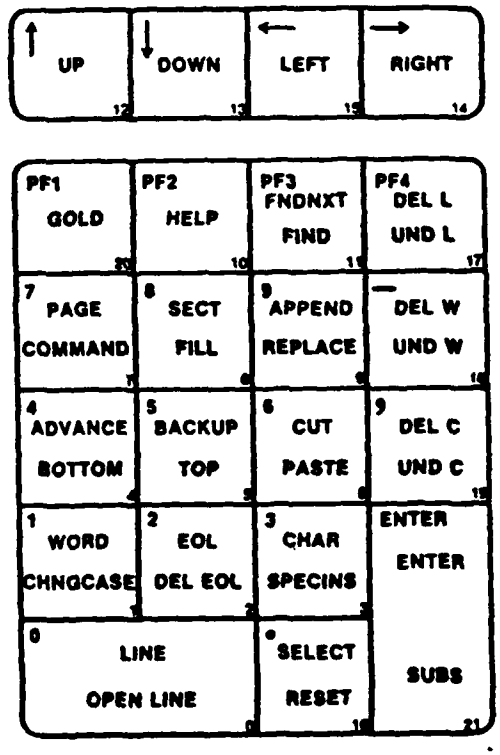


Figure 1: Keypad Editing Keys — VT100-Type Termin

These data not shown in "Guide"

```
8707A0  ,008,DEFSEC  ,A,105mm main gun  ,  2448.40
8707A0  ,008,DEFSEC  ,A,105mm main gun  ,  2449.95
8707A0  ,008,DEFSEC  ,A,105mm main gun  ,  2300.29
8707A0  ,008,DEFSEC  ,A,105mm main gun  ,  2530.84
8707A0  ,008,DEFSEC  ,A,105mm main gun  ,  3071.37
8707A0  ,008,DEFSEC  ,A,105mm main gun  ,  3221.86
8707A0  ,008,DEFSEC  ,A,105mm main gun  ,  3306.08
8707A0  ,008,DEFSEC  ,A,125mm main gun  ,   206.16
8707A0  ,008,DEFSEC  ,A,125mm main gun  ,   336.11
8707A0  ,008,DEFSEC  ,A,125mm main gun  ,   395.18
8707A0  ,008,DEFSEC  ,A,125mm main gun  ,   424.93
8707A0  ,008,DEFSEC  ,A,125mm main gun  ,   483.08
8707A0  ,008,DEFSEC  ,A,125mm main gun  ,   492.44
8707A0  ,008,DEFSEC  ,A,125mm main gun  ,   705.78
8707A0  ,008,DEFSEC  ,A,125mm main gun  ,   921.56
8707A0  ,008,DEFSEC  ,A,125mm main gun  ,   943.43
8707A0  ,008,DEFSEC  ,A,125mm main gun  ,  1481.09
8707A0  ,008,DEFSEC  ,A,125mm main gun  ,  2512.57
8707A0  ,008,DEFSEC  ,A,25mm            ,   343.64
8707A0  ,008,DEFSEC  ,A,25mm            ,  1683.45
8707A0  ,008,DEFSEC  ,A,25mm            ,  1979.76
8707A0  ,008,DEFSEC  ,A,ITOW (Bradley)  ,   269.26
8707A0  ,008,DEFSEC  ,A,ITOW (Bradley)  ,  1319.84
8707A0  ,008,DEFSEC  ,A,ITOW (Bradley)  ,  2655.91
8707A0  ,008,DEFSEC  ,A,ITOW (Bradley)  ,  3290.14
8707A0  ,008,DEFSEC  ,A,PKT (73mm)      ,   180.28
8707A0  ,008,DEFSEC  ,A,PKT (73mm)      ,  5572.08
```

Data from Example 8 from "Guide to Using ARI-NTC Research Database"

SPSSX-3

SPSSX Example 1 using output file from Example 8 of "Guide"

```
TITLE DEFEND IN SECTOR  87-07 MAIN GUN RANGE
*
COMMENT  Can be inserted on any line, can start with an *
*
* Here's the file input information
*
FILE HANDLE  ANY_NAME/ NAME="EXAMPLE8.DAT"
DATA LIST FILE=ANY_NAME  FIXED/ RANGE 48-54
*
* Here's my first procedure
*
CONDESCRIPTIVE RANGE
STATISTICS ALL
*
* Maybe I only want default statistics
*
CONDESCRIPTIVE RANGE
*
* If I want different statistics I can use another procedure
*
FREQUENCIES VARIABLES=RANGE/
        STATISTICS=MEAN MEDIAN/
*
* Now I'll modify the data to make it more concise
*
RECODE RANGE     (LO THRU 500 = 1)
                 (500 THRU 1000 =2)
                 (1000 THRU 1500 = 3)
                 (1500 THRU 2000 = 4)
                 (2000 THRU 2500 = 5)
                 (2500 THRU 3000 = 6)
                 (3000 THRU HIGHEST = 7)
*
* I can add labels to make output easier to read
*
VARIABLE LABELS RANGE 'RANGE OF ENGAGEMENT IN METERS'/
VALUE LABELS RANGE 1 '0-500' 2 '501-1000' 3 '1001-1500' 4 '1501-2000'
        5 '2001-2500' 6 '2501-3000' 7 '3000+'/
*
* Now for a procedures producing some simple graphics
*
FREQUENCIES VARIABLES=RANGE/ BARCHART/
FREQUENCIES VARIABLES=RANGE/ HISTOGRAM/
```

Keyword

This is a statement

" "

Input file name

Must match

Variable

In Columns

Data definition

First Procedure (Output p. 5)

Second Procedure (Output p. 6)

Third Procedure (Output p. 7)

Data Modification

Output p. 8

Output p. 9

```
*
* Here's my first procedure
*
CONDESCRIPTIVE RANGE
STATISTICS ALL
```

```
 3-Mar-88    DEFINED IN SECTOR  87-07 MAIN GUN RANGE
14:40:58     ARI - POM COMPUTER CENTER        on


NUMBER OF VALID OBSERVATIONS (LISTWISE) =        61.00

VARIABLE  RANGE

MEAN          1757.126                 S.E. MEAN        125.428
VARIANCE    959661.583                 KURTOSIS           2.382
SKEWNESS         .762                  S.E. SKEW           .306
MINIMUM          180                   MAXIMUM            5572

VALID OBSERVATIONS -        61         MISSING OBSERVATIONS -        0


STD DEV         979.623
S.E. KURT          .604
RANGE          5391.800
SUM          107184.700
```

SPSSX-5

```
*
* Maybe I only want default statistics
*
CONDESCRIPTIVE RANGE
```

```
 3-Mar-88    DEFEND IN SECTOR  87-07 MAIN GUN RANGE
14:40:58     ARI - POM COMPUTER CENTER       on
```

NUMBER OF VALID OBSERVATIONS (LISTWISE) = 61.00

VARIABLE	MEAN	STD DEV	MINIMUM	MAXIMUM	VALID N
RANGE	1757.126	979.623	180	5572	61

SPSSX-6

```
*
* If I want different statistics I can use another procedure
*
FREQUENCIES VARIABLES=RANGE/
          STATISTICS=MEAN MEDIAN/
```

1+ spaces required.
Considered continuation of preceding statement.

3-Mar-88 DEFEND IN SECTOR 87-07 MAIN GUN RANGE
14:40:59 ARI - POM COMPUTER CENTER on

RANGE

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	180	1	1.6	1.6	1.6
	206	1	1.6	1.6	3.3
	269	1	1.6	1.6	
	336	1			
	344				
	395				
				1.6	
			1.6	1.6	88.5
	2531	1	1.6	1.6	90.2
	2656	1	1.6	1.6	91.8
	3071	1	1.6	1.6	93.4
	3222	1	1.6	1.6	95.1
	3290	1	1.6	1.6	96.7
	3306	1	1.6	1.6	98.4
	5572	1	1.6	1.6	100.0
	TOTAL	61	100.0	100.0	

MEAN = 1757.126 MEDIAN = 1956.700

VALID CASES 61 MISSING CASES 0

Exercise:
Why do these values differ?

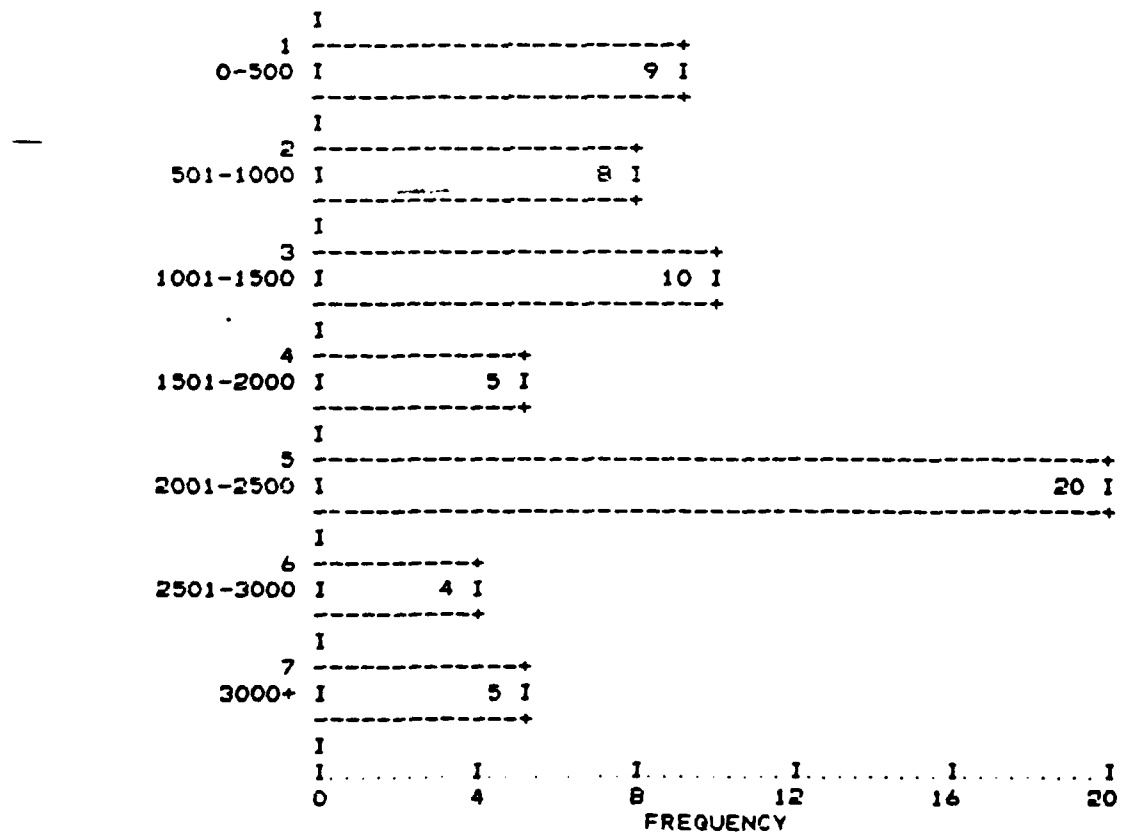
SPSSX-7

```
39  0  *
40  0  * Now for a procedures producing some simple graphics
41  0  *
42  0  FREQUENCIES VARIABLES=RANGE/ BARCHART/
```

```
 3-Mar-88    DEFEND IN SECTOR  87-07 MAIN GUN RANGE
14:41:00     ARI - POM COMPUTER CENTER       on
```

RANGE RANGE OF ENGAGEMENT IN METERS

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
0-500	1	9	14.8	14.8	14.8
501-1000	2	8	13.1	13.1	27.9
1001-1500	3	10	16.4	16.4	44.3
1501-2000	4	5	8.2	8.2	52.5
2001-2500	5	20	32.8	32.8	85.2
2501-3000	6	4	6.6	6.6	91.8
3000+	7	5	8.2	8.2	100.0
	TOTAL	61	100.0	100.0	



SPSSX - 8

```
43  0  FREQUENCIES VARIABLES=RANGE/ HISTOGRAM/


 3-Mar-88    DEFEND IN SECTOR  87-07 MAIN GUN RANGE
14:41:01     ARI - POM COMPUTER CENTER       on

RANGE        RANGE OF ENGAGEMENT IN METERS

                                                                VALID      CUM
  VALUE LABEL                 VALUE  FREQUENCY  PERCENT      PERCENT   PERCENT

0-500                             1          9     14.8         14.8      14.8
501-1000                          2          8     13.1         13.1      27.9
1001-1500                         3         10     16.4         16.4      44.3
1501-2000                         4          5      8.2          8.2      52.5
2001-2500                         5         20     32.8         32.8      85.2
2501-3000                         6          4      6.6          6.6      91.8
3000+                             7          5      8.2          8.2     100.0
                                       -------  -------      -------
                            TOTAL            61    100.0        100.0

    COUNT       VALUE     ONE SYMBOL EQUALS APPROXIMATELY    .40 OCCURRENCES

        9        1.00   ************************
        8        2.00   ********************
       10        3.00   *************************
        5        4.00   *************
       20        5.00   **************************************************
        4        6.00   **********
        5        7.00   *************
                      I.........I.........I.........I.........I.........I
                      0         4         8        12        16        20
                                HISTOGRAM FREQUENCY

VALID CASES       61       MISSING CASES       0
```

SPSSX-9

```
>1.
>range
>range o
>range of t .
>retrieve
>(p.time,p.tpid,s.si
>   where p.flpn = q.lpn
>     and q.side = r.pside
>     and q.ptype = r.ptype          ,
>     and p.fwpn = r.pmiles          /* ma.
>     and p.flpn > " 0"              /* firers
>     and p.tlpn = s.lpn             /* match on .
>     and s.side = t.pside           /* match on force
>     and s.ptype = t.ptype          /* match on player ty,
>     and not q.side = s.side        /* omit fratricides
>   sort by p.time                   /* maintain chronological or

|time                 |tpid  |side  |pveh              |fpid  |result
|------------------------------------------------------------------
| 06 Jun 87 05:56:20  |226   |O     |BMP               |A32   |K       5mm main gun |
| 06 Jun 87 05:56:30  |225   |O     |BMP               |A32   |K       5mm main gun |
| 06 Jun 87 05:56:30  |227   |O     |BMP               |A32   |H       5mm main gun |
| 06 Jun 87 05:56:45  |231   |O     |BMP               |A32   |H       5mm main gun |
| 06 Jun 87 06:00:56  |421   |O     |BMP               |A32   |H       5mm main gun |
| 06 Jun 87 06:01:38  |420   |O     |BMP               |A32   |K       5mm main gun |
| 06 Jun 87 06:21:02  |32C   |B     |APC               |444   |K
| 06 Jun 87 06:52:36  |326   |O     |BMP               |B21   |K
| 06 Jun 87 06:53:18  |12B   |B     |APC               |A36   |N
| 06 Jun 87 06:53:52  |12B   |B     |APC               |450   |N
| 06 Jun 87 06:55:00  |B21   |B     |M60 A1/A3 Tank    |111   |H
| 06 Jun 87 06:55:48  |12B   |B     |APC               |650   |K
| 06 Jun 87 06:55:50  |B21   |B     |M60 A1/A3 Tank    |A36   |H
| 06 Jun 87 06:55:51  |ST2   |B     |APC               |A36   |N
| 06 Jun 87 07:18:23  |444   |O     |ZSU-23-4          |B31   |K
| 06 Jun 87 07:22:03  |B31   |B     |M60 A1/A3 Tank    |450   |H      KT (73mm)       |
| 06 Jun 87 07:22:04  |B31   |B     |M60 A1/A3 Tank    |450   |H      KT (73mm)       |
| 06 Jun 87 07:22:04  |B31   |B     |M60 A1/A3 Tank    |450   |N      KT (73mm)       |
| 06 Jun 87 07:22:12  |B31   |B     |M60 A1/A3 Tank    |150   |N
| 06 Jun 87 10:10:13  |ST2   |B     |APC               |116   |N
| 06 Jun 87 10:10:35  |ST2   |B     |APC               |116   |N
| 06 Jun 87 10:10:44  |ST2   |B     |APC               |116   |N
|------------------------------------------------------------------
End of Request - 22 Rows
-------------------------------------------------------------------
```

Used EDT to delete these lines

what's going on here?

"

Data from Example 5 from "Guide"

SPSSX-10

SPSSX Example 2 using output file from Example 5 in "Guide"

```
* Eliminate duplicate firings
*
FILE HANDLE ANY_NAME/NAME="EXAMPLE5A.DAT"
DATA LIST FILE=ANY_NAME FIXED/ DAY 3-4 MONTH 6-8 (A) YR 11
                               HR 13-14 MIN 16-17 SEC 19-20
        SIDE  30 (A)
        FIRER  53-55 (A)
*
*   Let's just count the engagements first with a procedure
*
CROSSTABS TABLES=FIRER BY SIDE
*
*   Make sure sorted by time
*
SELECT IF (NOT
        (FIRER = LAG(FIRER,1)) AND
        (YR = LAG(YR,1)) AND
        (MONTH = LAG(MONTH,1)) AND
        (DAY = LAG(DAY,1)) AND
        (HR = LAG(HR,1)) AND
        (MIN = LAG(MIN,1)) AND
        (SEC = LAG(SEC,1)) AND
        (SIDE = LAG(SIDE,1))))
*
*
CROSSTABS TABLES=FIRER BY SIDE
```

These are alphabetical characters

Output p. 12

LAG(var, 1) gives value of var from previous case.

Output p. 13

SPSSX - 11

```
*
*   Let's just count the engagements first with a procedure
*
CROSSTABS TABLES=FIRER BY SIDE
```

```
 4-Mar-88    SPSS-X RELEASE 3.0 FOR VAX/VMS
10:24:26     ARI - POM COMPUTER CENTER        on
```

CROSSTABULATION

FIRER BY SIDE

FIRER	COUNT	SIDE B	SIDE O	ROW TOTAL
111		1		1
				4.5
116		3		3
				13.6
150		1		1
				4.5
444		1		1
				4.5
450		4		4
				18.2
650		1		1
				4.5
A32			6	6
				27.3
A36		3		3
				13.6
B21			1	1
				4.5
B31			1	1
				4.5
COLUMN TOTAL		14	8	22
		63.6	36.4	100.0

NUMBER OF MISSING OBSERVATIONS = 0

SPSSX-12

```
*   Make sure sorted by time
*
SELECT IF (NOT
        ((FIRER = LAG(FIRER,1)) AND
         (YR = LAG(YR,1)) AND
         (MONTH = LAG(MONTH,1)) AND
         (DAY = LAG(DAY,1)) AND
         (HR = LAG(HR,1)) AND
         (MIN = LAG(MIN,1)) AND
         (SEC = LAG(SEC,1)) AND
         (SIDE = LAG(SIDE,1))))
CROSSTABS TABLES=FIRER BY SIDE
```

FIRER — CROSSTABULATION BY SIDE

FIRER	COUNT	SIDE B	SIDE C	ROW TOTAL
111		1		1
				5.0
116		3		3
				15.0
150		1		1
				5.0
444		1		1
				5.0
450		3		3
				15.0
650		1		1
				5.0
A32			5	5
				25.0
A36		3		3
				15.0
B21			1	1
				5.0
B31			1	1
				5.0
	COLUMN TOTAL	13	7	(20)
		65.0	35.0	100.0

Exercise: Look at largest ranges on p. 3. Are they valid? Write an appropropiate SELECT IF statement.

Two were eliminated because of duplication

SPSSX-13

SPSSX Example 3 using output file from Example 8 in "Guide"

```
TITLE FIRING RANGES
*
* Actually, we made an error in example one
* There are different weapon systems in the table.
*
FILE HANDLE  ANY_NAME/ NAME="EXAMPLE8.DAT"
DATA LIST FILE=ANY_NAME  FIXED/ WPN_TYPE 30-43 (A) RANGE 48-54
*
RECODE RANGE     (LO THRU 500 = 1)
                 (500 THRU 1000 =2)
                 (1000 THRU 1500 = 3)
                 (1500 THRU 2000 = 4)
                 (2000 THRU 2500 = 5)
                 (2500 THRU 3000 = 6)
                 (3000 THRU HIGHEST = 7)
*
* I can add labels to make output easier to read
*
VARIABLE LABELS RANGE 'RANGE OF ENGAGEMENT IN METERS'/
VALUE LABELS RANGE 1 '0-500' 2 '501-1000' 3 '1001-1500' 4 '1501-2000'
        5 '2001-2500' 6 '2501-3000' 7 '3000+'/
*
* First all main guns for BLUEFOR
*
SUBTITLE FOR BLUEFOR MAIN GUNS
TEMPORARY
SELECT IF (WPN_TYPE = '105mm main gun')
FREQUENCIES VARIABLES=RANGE/
*
* Now all main guns for OPFOR
*
SUBTITLE FOR OPFOR MAIN GUNS
TEMPORARY
SELECT IF (WPN_TYPE = '125mm main gun')
FREQUENCIES VARIABLES=RANGE/
*
* Now ALL main guns with statistical test
*
SUBTITLE FOR BLUEFOR AND OPFOR MAIN GUNS
TEMPORARY
SELECT IF ((WPN_TYPE = '105mm main gun') OR
           (WPN_TYPE EQ '125mm main gun'))
CROSSTABS RANGE BY WPN_TYPE
STATISTICS 1
*
* Now all weapons
*
SUBTITLE FOR ALL WEAPONS
TEMPORARY
CROSSTABS RANGE BY WPN_TYPE
```

Data Modification but Temporary (good for next procedure only)

Output p 15

Output p. 16

Output p. 17

(t-test p. 18)

Output p. 18

SPSSX-14

```
41  0  * First all main guns for BLUEFOR
42  0  *
43  0  SUBTITLE FOR BLUEFOR MAIN GUNS
44  0  TEMPORARY
45  0  SELECT IF (WPN_TYPE = '105mm main gun')
46  0  FREQUENCIES VARIABLES=RANGE/
```

```
 4-Mar-88    FIRING RANGES
11:23:39     FOR BLUEFOR MAIN GUNS

RANGE        RANGE OF ENGAGEMENT IN METERS
```

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
501-1000	2	5	13.2	13.2	13.2
1001-1500	3	7	18.4	18.4	31.6
1501-2000	4	2	5.3	5.3	36.8
2001-2500	5	19	50.0	50.0	86.8
2501-3000	6	2	5.3	5.3	92.1
3000+	7	3	7.9	7.9	100.0
	TOTAL	38	100.0	100.0	

VALID CASES 38 MISSING CASES 0

SPSSX-15

```
47  0  *
48  0  * Now all main guns for OPFOR
49  0  *
50  0  SUBTITLE FOR OPFOR MAIN GUNS
51  0  TEMPORARY
52  0  SELECT IF (WPN_TYPE = '125mm main gun')
53  0  FREQUENCIES VARIABLES=RANGE/
```

```
 4-Mar-88    FIRING RANGES
11:23:40     FOR OPFOR MAIN GUNS

RANGE      RANGE OF ENGAGEMENT IN METERS
```

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
0-500	1	6	54.5	54.5	54.5
501-1000	2	3	27.3	27.3	81.8
1001-1500	3	1	9.1	9.1	90.9
2501-3000	6	1	9.1	9.1	100.0
	TOTAL	11	100.0	100.0	

VALID CASES 11 MISSING CASES 0

SPSSX 16

```
54  0  *
55  0  * Now ALL main guns with statistical test
56  0  *
57  0  SUBTITLE FOR BLUEFOR AND OPFOR MAIN GUNS
58  0  TEMPORARY
59  0  SELECT IF ((WPN_TYPE = '105mm main gun') OR
60  0             (WPN_TYPE EQ '125mm main gun'))
61  0  CROSSTABS RANGE BY WPN_TYPE
62  0  STATISTICS 1
```

4-Mar-88 FIRING RANGES
11:23:41 FOR BLUEFOR AND OPFOR MAIN GUNS

RANGE — RANGE OF ENGAGEMENT IN METERS — CROSSTABULATION BY WPN_TYPE

RANGE	COUNT / ROW TOTAL	105mm ma	125mm ma
0-500	1		6
	12.2		
501-1000	2	5	3
	16.3		
1001-1500	3	7	1
	16.3		
1501-2000	4	2	
	4.1		
2001-2500	5	19	
	38.8		
2501-3000	6	2	1
	6.1		
3000+	7	3	
	6.1		
COLUMN TOTAL		38	11
		77.6	22.4

ROW TOTAL: 6, 8, 8, 2, 19, 3, 3, 49; 100.0

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F. < 5
29.37460	6	0.0001	0.449	11 OF 14 (78.6%)

Suggests very unlikely finding is due to chance.

But Chi-square is not an appropriate test because: expected frequency

SPSSX-17

SPSSX Example 4 using Example 8 data from "Guide."

```
*
* Now for a more appropriate test of the difference in
*  main gun ranges
*
SUBTITLE FOR BLUEFOR AND OPFOR MAIN GUNS
TEMPORARY
SELECT IF ((WPN_TYPE = '105mm main gun') OR
          (WPN_TYPE EQ '125mm main gun'))
IF (WPN_TYPE = '105mm main gun') SIDE=1
IF  (WPN_TYPE EQ '125mm main gun') SIDE=2
VALUE LABELS SIDE 1 'BLUE' 2 'RED'/
T-TEST GROUPS=SIDE(1,2)/VARIABLES=RANGE
```

Used data before grouping into range bands.

Chi-square & t-test are inferential statistics.

4-Mar-88 11:23:37 FIRING RANGES FOR BLUEFOR AND OPFOR MAIN GUNS

\- T - T E S T - - - - -

GROUP 1 - SIDE EQ 1.00
GROUP 2 - SIDE EQ 2.00

VARIABLE	NUMBER OF CASES	MEAN	STANDARD DEVIATION	STANDARD ERROR
RANGE				
GROUP 1	38	1982.2447	657.471	106.656
GROUP 2	11	809.2455	671.369	202.425

VALUE LABELS don't work with t-test procedure

POOLED VARIANCE ESTIMATE			SEPARATE VARIANCE ESTIMATE		
T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.	T VALUE	DEGREES OF FREEDOM	2-TAIL PROB
5.19	47	0.000	5.13	15.99	0.000

← The means are different!

SPSSX-18

Blue tanks appear to have engaged at longer ranges than Red tanks in this data

```
66  0  SUBTITLE FOR ALL WEAPONS
67  0  TEMPORARY
68  0  CROSSTABS RANGE BY WPN_TYPE
69  0
```

4-Mar-88 FIRING RANGES
11:23:43 FOR ALL WEAPONS

C R O S S T A B U L A T I O N O F
RANGE RANGE OF ENGAGEMENT IN METERS BY WPN_TYPE

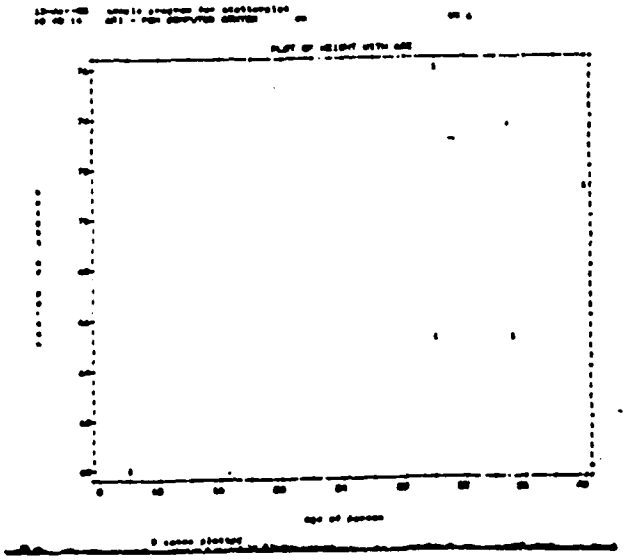
RANGE	COUNT	WPN_TYPE 105mm ma	125mm ma	25mm	TOW (Br	PKT (73m	Sagger	ROW TOTAL
0-500	1		6	1	1	1		9
								14.8
501-1000	2	5	3					8
								13.1
1001-1500	3	7	1		1		1	10
								16.4
1501-2000	4	2		2			1	5
								8.2
2001-2500	5	19					1	20
								32.8
2501-3000	6	2	1		1			4
								6.6
3000+	7	3			1	1		5
								8.2
	COLUMN TOTAL	38	11	3	4	2	3	61
		62.3	18.0	4.9	6.6	3.3	4.9	100.0

SPSSX-19

```
title sample program for scatterplot

* 13 April 88  Dwight Goehring

data list free / height weight age

* saves paper by suppressing page ejects
set length=none

begin data
71   200  40
65 150 30
 76  230 30
60 100 10
65     130   35
end data

variable labels
          height 'height of person'
          weight 'weight of person'
          age 'age of person'

plot plot=height with weight/

plot plot=height with age/

plot plot=weight with age/

* This procedure is appropriate if data are interval scaled
correlations variables=height weight age/
         statistics=all

* This procedure is appropriate if data are ordinal e g. rank orderings
nonpar corr variable=height weight age/
```

Spaces delimit data elements

Data in job file



SPSSX-20

General-purpose NTC Analysis of Training Tool (GNATT)

General-purpose NTC Analysis of Training Tool (GNATT)

Purpose: Dynamically replay NTC training exercise data on a MS-DOS computer with color

Features:

- ☆ Designed for non-programming users
- ☆ Modify the displayed area from 2000 to < 1 sq km
- ☆ Display battlefield graphics
- ☆ Select and color code units and weapon types
- ☆ Indicate MILES engagements
- ☆ Display players that have been killed
- ☆ 150 missions currently on floppy disks

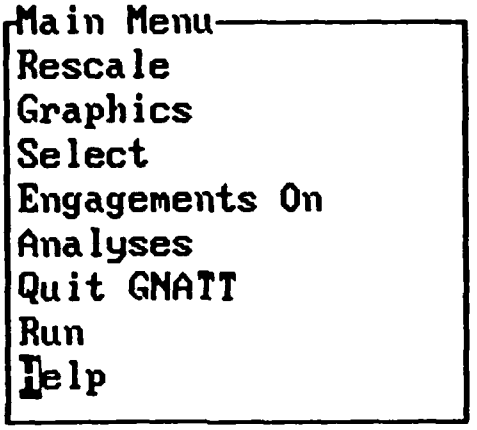
Introduction to GNATT

The General-purpose NTC Analysis of Training Tool is an interim product of a larger task in support of CATA/CALL. It enables selected data from the INGRES Mission Databases to be displayed on MS-DOS computers having 16-color (EGA) capabilities. GNATT is based on the assumption that visual representation of data is a powerful aid to understanding. The user can view the training exercise movement and engagement activity sequentially, change the viewing scale, display various battlefield graphics, and select units and weapon types for color coding.

GNATT is menu driven, supports a Microsoft mouse, and was written for use by non-programers. On-line, context-dependent help is available throughout the program.

Input data for GNATT are prepared on the ARI-POM VAX computer for training exercises using existing INGRES programs, then placed on either floppy or hard disks for use by GNATT on an MS-DOS microcomputer. Production of hardcopy of GNATT screen displays is supported through included software for printers using the Epson FX protocol.

The following pages are intended to provide reference information about GNATT. Most of the information is reproduced directly from the computer screen. The latest information about running the program can be obtained by inserting the program disk and keying TYPE A:$$README.1ST.



Help Window

Use mouse, or arrow & return keys.

Rescale. GNATT displays all NTC or saved grids. User may input own values. See Rescale help.

Graphics. Displays menus for selection of battlefield graphics.

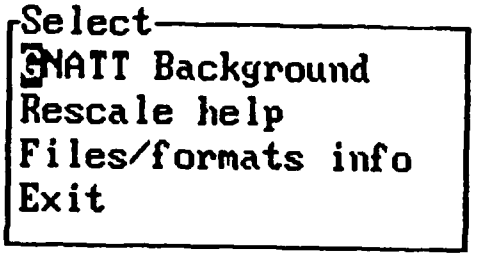
Select. Select units & weapons & color.

Engagements. Display players Killed, Hit or NMed during interval in lighter color. Lines show matched pairings in color of firer.

Quit. Terminates GNATT program.

Run. Begin exercise replay.

Press any key for more...

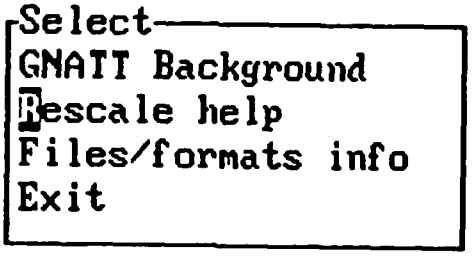


Help Window

GNATT Background

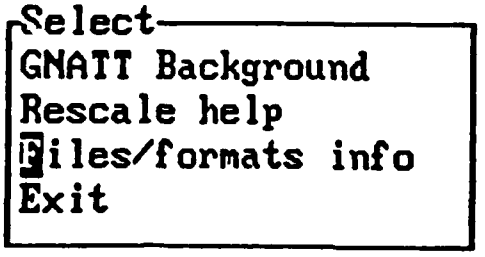
This software is a tool developed in support of an on-going research project of the U.S. Army Research Institute with the goal of capturing NTC training knowledge in a computer program. It is coded in Texas Instruments' SCHEME, a dialect of LISP, a high-level computer language widely used for artificial intelligence research and applications.

GNATT replays NTC training exercise data derived from the selected Ingres tables residing in the ARI-NTC database located at the ARI Monterey Field Unit. As this tool may have some general utility for analysis and research of NTC training exercise data it has been adapted for easy use by non-programmers. Comments may be sent to Chief, ARI, P.O. Box 5787, Presidio of Monterey, California 93944-5011.



Help Window

Scaling is controlled by two 6-digit numbers which correspond to the lower-left and upper-right corners of the displayed region using standard map grid coordinates. Values are either retrieved from file SCALE.DAT or, if it is missing, all of NTC is shown. If the user changes the values they are saved in SCALE.DAT. For some scale values grids displayed on the screen will be non-square. Either the scale values can be changed to correct this or the vertical size knob on the back of most monitors can be adjusted. If one is printing screens using a dump utility, such as "Frieze" which comes with PC Paintbrush, the scale values may need further adjustment to produce square 1 KM grids. Screen grid lines evenly divisible by 50 are shown in bright white for easier reference. Values for X can range from 100 to 620 and Y from 870 to 320 (i.e. 990, 000, 010 etc).

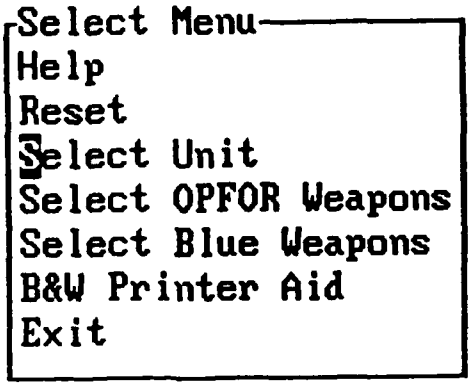


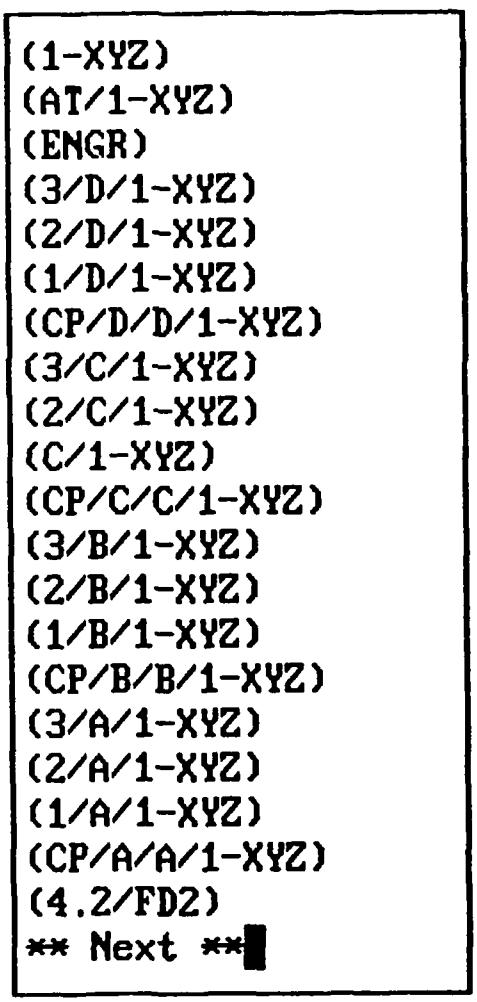
Help Window

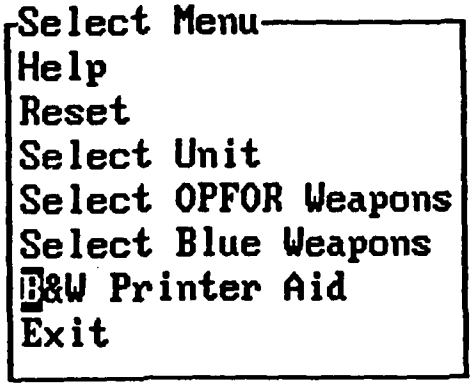
GNATT needs four data files (PL.DAT, CMT.DAT, ENG.DAT & ORG.DAT) and an optional fifth (MORTALTY.DAT) identifying dead players, marked by X. File paths are contained in FILE.DAT. The sample data provided illustrate the required format and include, at the beginning in comment form, the INGRES RDMS Report Writer code for generating the files. On the ARI-POM VAX computer the files can be generated for a database by copying the *.RW files into your account by typing @[DWIGHT]GNATT-COPY, editing using EDT for the desired units or start and end times of the exercise segment and running by typing at the $ prompt:

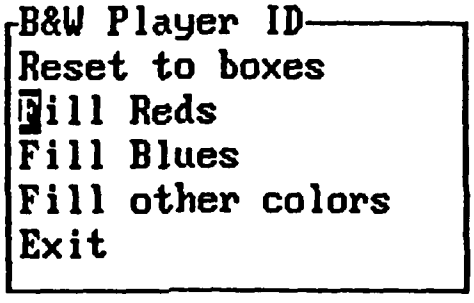
```
@[DWIGHT]GNATT <your_database_name> .
```

Then the *.DAT files in your account can be downloaded for use with GNATT on an MS-DOS computer with EGA.

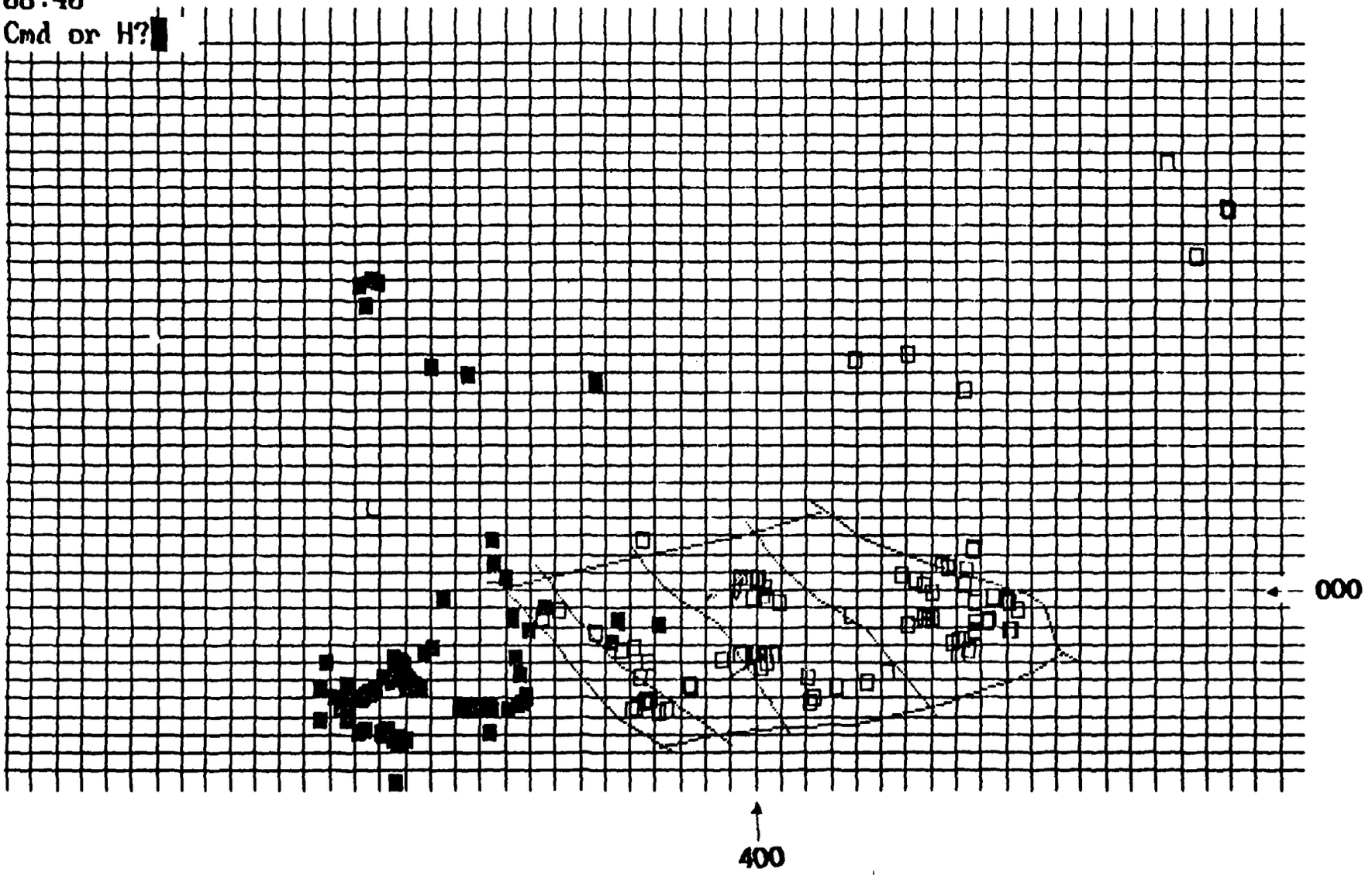

Select Menu
Help
Reset
Select Unit
Select OPFOR Weapons
Select Blue Weapons
B&W Printer Aid
Exit


(1-XYZ)
(AT/1-XYZ)
(ENGR)
(3/D/1-XYZ)
(2/D/1-XYZ)
(1/D/1-XYZ)
(CP/D/D/1-XYZ)
(3/C/1-XYZ)
(2/C/1-XYZ)
(C/1-XYZ)
(CP/C/C/1-XYZ)
(3/B/1-XYZ)
(2/B/1-XYZ)
(1/B/1-XYZ)
(CP/B/B/1-XYZ)
(3/A/1-XYZ)
(2/A/1-XYZ)
(1/A/1-XYZ)
(CP/A/A/1-XYZ)
(4.2/FD2)
** Next **

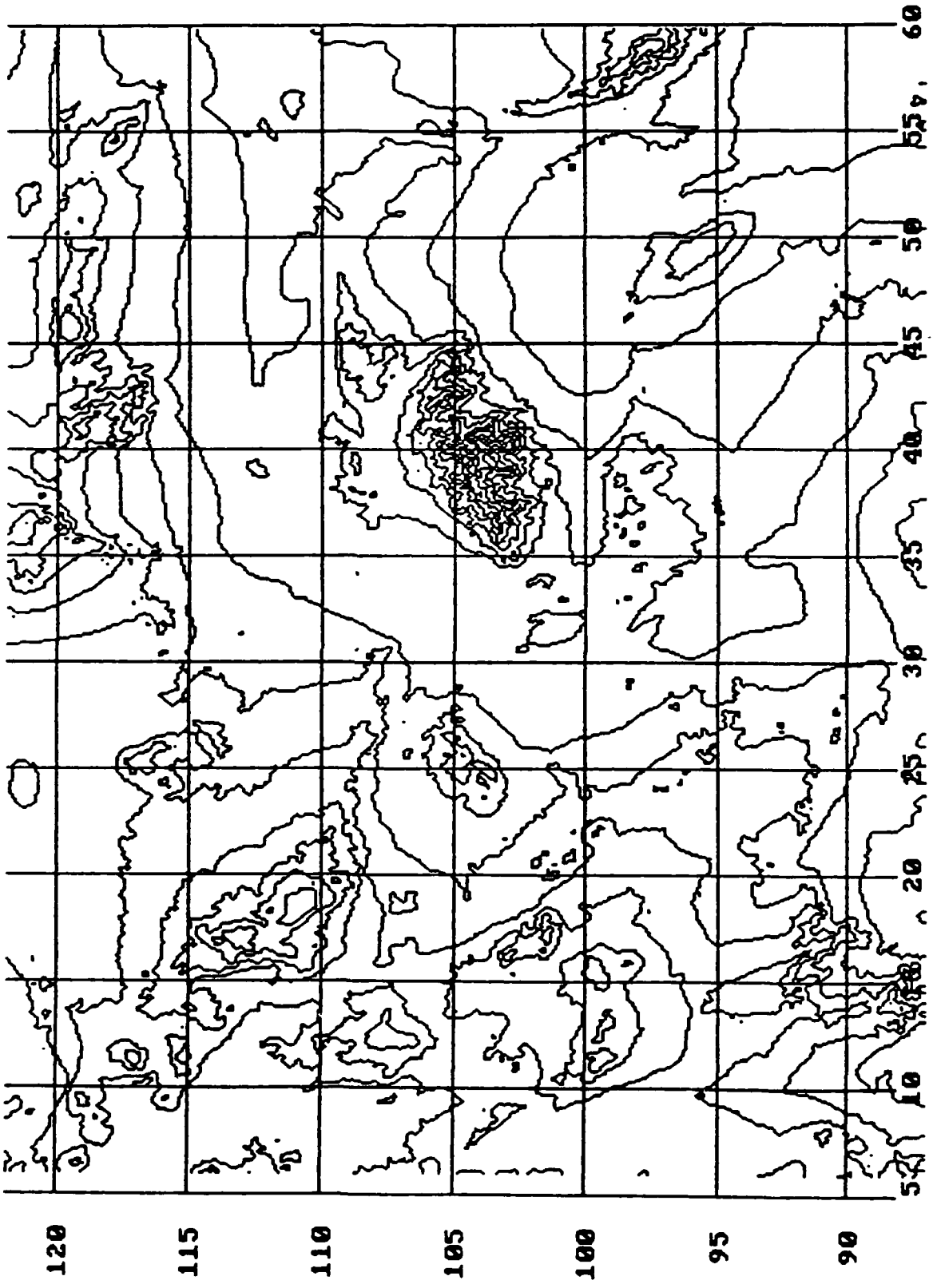




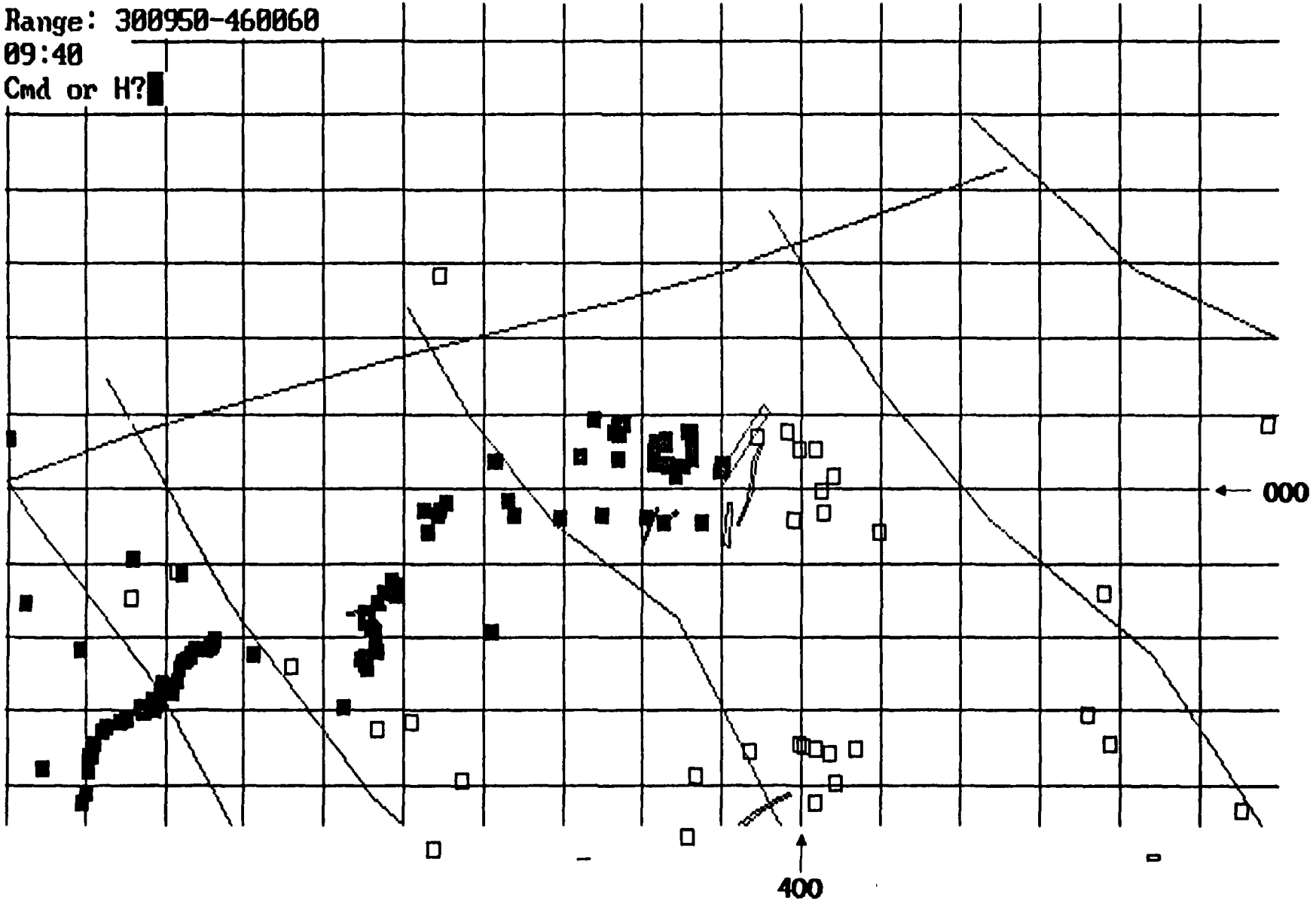
OPFOR players are filled in following figures.



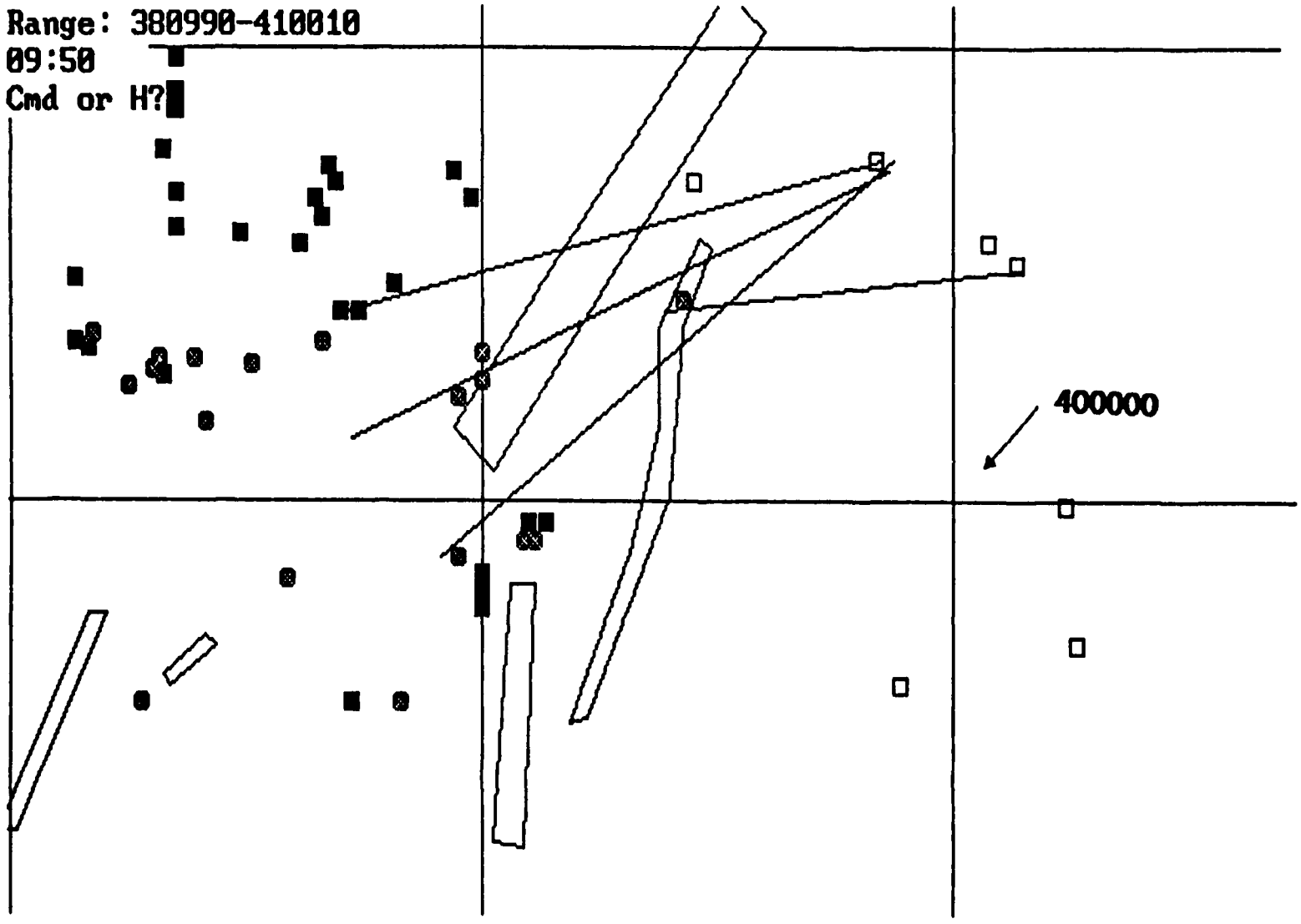
Default scale is all of NTC. Each square = 1 km.



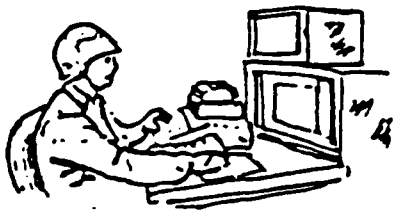
Gross topographic features for reference

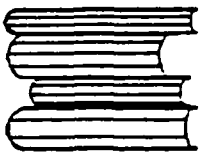


Scale has been changed. Rectangles are BLUEFOR minefields. Lines are BN graphics.

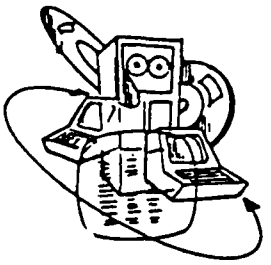


Changed scale. Matched engagements and dead players displayed.





ARI-NTC ARCHIVE CATALOG



MS. HAMZA

ARI

FOREWORD

A vast amount of data from the National Training Center (NTC) is archived by the Army Research Institute at the Presidio of Monterey (ARI-POM). The purpose of this catalog is a job aid to facilitate further usage of the ARI-NTC archive. This catalog also serves a broader audience by providing a brief overview of NTC's mission and operation as well as of the various ARI-NTC data sources.

The information contained in this catalog includes NTC data from rotation 8101 through 8901. The dynamic situation at the NTC directly contributes to changes in its operations, the instrumentation system, and battlefield observations and data collection. These dynamics affect the data archived at ARI-POM.

Future utilization of NTC data will be broadened by electronic access for Army centers and schools.

INTRODUCTION

Learning to win in the fast-paced, dynamic combined-arms environment requires that Army units be challenged with realistic situations that demand rapid assessment of the tactical situation, timely decision making, and effective employment of a mix of high firepower weapons. The Army's National Training Center (NTC) at Fort Irwin, California was established to meet this demand for an intensive combat training environment.

The mission of the NTC is to provide highly realistic and intensified combined arms and services training in accordance with Air Land Battle Doctrine for battalion/task forces and squadrons in a mid to high intensity combat environment. Also, the NTC provides a data source for training doctrine, organization, and equipment improvements.

Heavy and light brigades go to the NTC to train for fourteen days and nights on tactical missions with force-on-force MILES engagements against an opposing force employing Warsaw Pact tactics. NTC training also includes live-fire exercises. The NTC conducts 14 rotations each year. On the average, a rotation consists of 6 force-on-force and 3 live fire exercises.

Observer/controllers (OCs) are the coaches and trainers in the field alongside the visiting units during training at the NTC. They follow the battle and advise soldiers and officers on how to improve their battle tactics. They correlate subjective observations with the data collected from the instrumentation and other sources to conduct after action reviews which are the heart of the learning process at the NTC. Data--both objective and computer-gathered information and subjective field observations gathered by video cameras and the OCs--are fed to the operations center to be analyzed, even as the battle continues. Significant events which affect the outcome of the battle are isolated and their causes are determined. Performance strengths and weaknesses are highlighted and are played back for review and critique following each live-fire and force-on-force exercise. Units receive a Take Home Package which provides statistical data and narrative assessment of unit performance.

The Combined Arms Training Activity (CATA) is the TRADOC coordinator for the development and implementation of NTC programs and dissemination of NTC Lessons Learned. CATA is the controlling agency of all NTC data and access to NTC data is coordinated through CATA. ARI receives unit performance data from the NTC Operations Group (OPS GP) and the Training Analysis and Feedback (TAF) Division. ARI then interacts with the Center for Army Lessons Learned (CALL) to tailor databases to address Army issues. ARI conducts research to develop measures of NTC unit performance and effectiveness to support CALL in developing Lessons Learned and estimating training readiness.

NTC data are routinely collected and forwarded to ARI-POM where it is archived. The archive represents Armor and Mechanized Infantry Task Force rotations beginning with the first NTC rotation (8101) to the present (8901). Rotations from 8601 on, maintain greater stability of NTC data for research. Sufficient standardization, complete data collection, and rules of engagement were not well established until then. Hence, NTC data archived at ARI-POM are more representative of NTC operations from rotation 8601. Following is a description of the various data sources and its utility.

DESCRIPTION OF ARI-NTC DATA SOURCES

INSTRUMENTED DATA

INGRES DIGITAL DATA: The NTC digital database is derived from both the CIS log and conditionally the RDMS log digital data sources. The database is broken out into what is referred to as the "Mission Database" which consists of a mission-level INGRES database containing 19 tables. This database contains the event driven data captured during the engagement training exercise. Primary data elements are fire events (trigger pulls), pairing events (matched/unmatched), commo events (key depressed/ released), position/location with events (every five minutes), control measures (type & location), and unit organization. Since sufficient standardization, complete data collection, and rules of engagement were not established until rotation 8601, the digital data loaded into the INGRES database begin then.

CONTOUR AND PLAYER LOCATION PLOTS: This program is designed to generate a "snap-shot" of the friendly and enemy situation. A print out is produced which consists of elevation contours and player locations at the specified time during the battle. Such plots assist in determining "WHYS" of unit performance. The data are derived from the digital database and plots are developed on the VAX computer.

DEANZA GRAPHICS DISPLAY AND VT125 DATA DISPLAY: The DeAnza Replay Station enables analyst to playback the training exercise and display significant information about the events and conditions as they occurred. Two support displays (VT125 terminals) generate messages of key events as they occur and provide summary statistics and graphic displays of the data. Analysis of NTC data from the DeAnza is time consuming. Similar data can be generated from the Contour and Player Location Plots.

GENERAL-PURPOSE NTC ANALYSIS OF TRAINING TOOL (GNATT): This software tool developed for analysis of NTC Training allows training exercise data (player movement and engagements on NTC terrain) to be viewed and analyzed on any IBM PC or compatible computer. The program is menu driven and uses data from the VAX computer INGRES Relational Database Management System. Existing INGRES queries extract the data for a specified training exercise.

TAKE HOME PACKAGES (THP): This feedback to units emphasizes a review of unit performance within the framework of the battlefield operating systems. The document is primarily narrative with some battle statistics.

COMMUNICATIONS (COMMO): These audio recordings represent selected unit radio communications during the course of the battle. The Commo tapes contain complex data and analysis is labor intensive.

DESCRIPTION OF ARI-NTC DATA SOURCES

AFTER ACTION REVIEWS (AAR): These video recordings represent NTC feedback given at the Task Force, company/team, and platoon echelons. Also included are special AARs, i.e. FSB, FA, and Live Fire. AARs are intended to provide constructive, comprehensive, standardized format for training feedback after each mission.

INITIALIZATION FILE: This document contains various information on instrumented unit and player listings, primarily used by database managers to correspond RDMS data with CIS data. The analyst can use data contained in these listings to derive initial strength values.

OPERATIONS ORDERS (OP ORDERS): These documents describe the scenarios developed for unit training at the NTC.

COMBINED ARMS ASSESSMENT TEAM REPORTS (CAAT): Contains summary reports of SME obervations during NTC Focused Rotations.

STANDING OPERATING PROCUEDURE (SOP): This document describes the combat operations of an organization and its subordinate units. Procedures for Administrative, Logistical and Training for the combat processes (plan, prepare, coordinate, execute, and Command and Control) identified

NTC RULES OF ENGAGEMENT (ROE): This document establishes the basic guidelines for the conduct of ESX and LFX training at the NTC. The ROE apply to all personnel participating in, supporting, observing or controlling rotational unit training at the NTC.

DAILY STAFF JOURNALS: This NTC data source provides a log of sequential activities, noted by time and event, that is usually kept by an operator for each unit. Information is primarily used as a quick-update reference.

CENTER FOR ARMY LESSONS LEARNED (CALL) POST ROTATION INTERVIEWS (PRI): PRI serves as a valuable source of data collected by personnel from CALL (LAD-ATC). This data provides an NTC perspective of unit training performance based on interview data.

DESCRIPTION OF ARI-NTC DATA SOURCES

UNIT AFTER ACTION REPORT (AAR): This report is generated by the unit and includes a summary of their perceptions of training events and unit performance. This report is not systematically collected at this time.

NTC OBSERVATION DIVISION (NOD) REPORT: The NOD produces reports on a variety of issues based on various types of NTC data (battle damage assessment, interviews, etc.). These reports provide insights and recommendations for addressing issues and concerns.

ARI-NTC ARCHIVE CATALOG

This job aid is to assist analysts examining sixteen NTC data sources archived at ARI-POM by (1) describing the various data sources, (2) identifying the contents or data elements, (3) listing rotation periods available, and (4) locating and obtaining the data.

INSTRUMENTED DATA

INGRES DIGITAL DATA & CONTOUR AND PLAYER LOCATION PLOTS

Contents/Data Elements:

INGRES DIGITAL DATA

Nineteen tables within the INGRES database:

1. Mission Identification Table (MID),
2. Player State In ialization Table (PSIT),
3. Player State Update Table (PSUT),
4. Unit State Initialization Table (USIT),
5. Unit State Update Table (USUT),
6. Unit Type Table (UTT),
7. Player/ Vehicle/ Weapon Code Table (PVWT),
8. Firing Event Table (FET),
9. Pairing Event Table (PET),
10. Communication Table (CT),
11. Ground Player Position Location Table (GPLT),
12. Air Player Position Location Table (APLT),
13. IFCAS Target Table (IFTT)
14. IFCAS Target Group Table (IFGT),
15. IFCAS Mission fired Table (IFMF),
16. IFCAS Casualties Table (IFCT),
17. Minefield Casualties Table (MCT),
18. Control Measure Table (CMT), and
19. Control Measure Add Table (CMA).

ARI-NTC ARCHIVE CATALOG

Refer to Appendix A of the Guide to Using ARI-NTC Research Database for data elements within each of the 19 tables.

CONTOUR AND PLAYER LOCATION PLOTS

Graphics display depict:

- -Player Position Location (BLUEFOR & OPFOR)
- -Obstacles
- -Control Measures
- -Contours (20 meter interval)
- -Terrain Features
- -Universal Traverse Mercator (UTM grid)
- -Time Tagged

Availability:

Archive starts from 8309 to 8814
Rotations 8601-8814 are currently loaded into INGRES

Location & POC:

Bldg 110 (terminals); Mr. Richard Crenshaw.

DEANZA GRAPHICS DISPLAY & VT125 DATA DISPLAY

Contents/Data Elements:

DEANZA GRAPHICS DISPLAY

Dynamic	Static
-Mission Header	-Grid Lines
-Pairing Events	-Cross Country Mobility
-Position Location	-Relief
-Player Types	-Elevation Contours
-Player Status	-Sun Position
-Unit ID	
-Target ID	
-Firer ID	
-Control Measures	

VT125 DATA DISPLAY

- -Battlefield Status and Events
- -Players' Tactical Performance
- -Communications Data
- -Elements of Information

Availability:
The DeAnza Replay Station is not operational for use other than demonstration.

Location & POC:
Bldg 110; Mr. Richard Crenshaw.

GNATT

Contents/Data Elements:

1. Player Location (time tagged)
2. Player Engagement (kill, hit or near miss) (time tagged)
3. Unit Affliation
4. Battlefield graphics

Requirements:

MS DOS computer 640K with Extended Graphics Adapter (EGA).
Optionally, a printer using Epson FX Protocol is needed to print displays.

Availability:

Data can be produced for any INGRES database.

Location & POC:

of program distributed in workshop (starting Aug 88)
by Dr. Dwight Goehring

TAKE HOME PACKAGES (THP)

Contents/Data Elements:

I. Missions Conducted
II. General Summary
III. Mission Statements/Commander's Intent
IV. Operating System/Lessons Learned
  A-G Annexes of Battlefield Operating Systems (BOS)
    1. Trends/Recommendations
    2. Live Fire
  H NCO Support Channel
V. Statistical Analysis
  1. TF Battle Losses
  2. Company/Team Battle Losses
  3. Weapon Systems Causing OPFOR Casualties
  4. Battle Loss Ratio
VI. Company/Team AAR

THP organization and format reflects rotation 8711 onward. Earlier THP organization was by mission rather than by BOS, however, the content remains unchanged.

Availability:
Rotations: 8101-03, 8201-08, 8301-07, 8309-10, 8401-12, 8501-14, 8601-10, 8612-14, 8701-14, 8801-8901

Location & POC:
Bldg 105 (Warehouse)
Check Out/In through SFC De La Rosa

COMMUNICATIONS (COMMO)

Contents/Data Elements:
40 Channel Capacity; all net coverage

Availability:
Rotations: 8504, 8610, 8612-14, 8701-14, 8801-11

Location & POC:
Tapes are in Bldg 105; 40 Channel Tape Recorder is located in Bldg 110.
Tapes are checked out/in through SFC De La Rosa

ARI-NTC ARCHIVE CATALOG

AFTER ACTION REVIEWS (AAR)

Contents/Data Elements:

1. Video Recording of TF Level AAR After Each Mission
2. Video Recording of Selected Company/Team Level AARs
3. Video Recording of Selected Platoon Level AARs
4. Video Recording for FSB, ENGINEER, BDE, FA, CSS, AVN, TOC, & ADA AARs
5. Video Recording for IN, AR, & FA Live Fire
6. Video Recording of FINAL AAR for IN, AR, FA, FSB, & AVN

Availability:

Rotations: 8205, 8301-02, 8304-10, 8312, 8405-10, 8412, 8504, 8506, 8605-10, 8612-14, 8701-14, 8801-11

8805-present: Six 30-minute tapes per mission ranging from 3 to 4 hours (some tapes may be 1-hour long) about 300 tapes/rotation.

Prior to 8805: 2 to 4 1-hour long tapes; about 180 tapes per rotation; Tapes are 3/4 inch wide.

Location & POC:

Bldg 105 (Warehouse)

Check Out/In through SFC De La Rosa

INITIALIZATION FILE

Contents/Data Elements:

Unit Listing:

- Force
- Unit name & description
- Line/Task Organization

Player Listing:

- Force & Description
- Player Identification (bumper number)
- B-Unit Identification
- Logical Player Number (LPN)
- Task Organization
- Calculation of Center of Mass

Availability:

Rotations: 8501-14, 8601-10, 8612-14, 8701-14, 8801-8901

Location & POC:

Bldg 105 (Warehouse)
Check Out/In through SFC De La Rosa

OPERATIONS ORDERS (OP ORDERS)

Contents/Data Elements:

1. Commanders Concept of the Mission
2. Operation Order
3. Graphic Overlays
4. Annexes

Availability:

Rotations: 8609, 8613-14, 8701-14, 8801-8901

Location & POC:

Bldg 105 (Warehouse)
Check Out/In through SFC De La Rosa

COMBINED ARMS ASSESSMENT TEAM REPORTS (CAAT)

Contents/Data Elements:

Obervations and recommendations--organized by:

1. Operating System
2. DTOML Area
3. Echelon

Executive Summary:

1. Objectives
2. Findings

Availability:

Rotations: 8601-8814

Location & POC:

Bldg 105 (Warehouse)
Check Out/In through SFC De La Rosa

ARI-NTC ARCHIVE CATALOG

UNIT SOPs

Contents/Data Elements:

Battalion Operations
Admin/Log
Training

Availability:

1 rotation; no longer being forwarded to ARI from the NTC.

Location & POC:

Bldg 105 (Warehouse)
Check Out/In through SFC De La Rosa

NTC RULES OF ENGAGEMENT

Contents/Data Elements:

Introduction
Rules discussing:
Engagement Simulation Exercise (ESX)
Live Fire Exercise

Availability:

One Copy of October 1987 issue

Location & POC:

Bldg 105 (Warehouse)
Check Out/In through SFC De La Rosa

DAILY STAFF JOURNAL LOGS

Contents/Data Elements:

Reports:
- Commanders Sit Rep
- Intelligence
- Recon
- Logistics (FSB)
- Airspace Coordination
- NBC
- Air Request
- Div Frag Order
- Warning Order
- Tactical/Special Events

Availability:

Rotations: 8613, 8701-08, 8711-12, 8801-14, 8901

Location & POC:

Bldg 105 (Warehouse)
Check Out/In through SFC De La Rosa

CALL POST ROTATION INTERVIEWS (PRI)

Contents/Data Elements:

Schedule of interviews
Observations and Assessments Form
Post-Rotation Interview Transcript

Availability:

Rotations: 8608, 8703, 8704

Location & POC:

Bldg 105 (Warehouse)
Check Out/In through SFC De La Rosa

UNIT AAR

Contents/Data Elements:

After Action Report:
Observation
Discussion
Recommendation

Availability:

Rotations: 8506, 8510, 8511, 8513, 8601-8603, 8605-06, 8609, 8701, 8702, 8705, 8801

Location & POC:

Bldg 105 (Warehouse)
Check Out/In through SFC De La Rosa

NTC OBSERVATION DIVISION (NOD) REPORT

Contents/Data Elements:

NOD Report:
Observation
Discussio
Recommendation

Availability:

Rotations: 8701-8706, 8708, 8806

Location & POC:

Bldg 105 (Warehouse)
Check Out/In through SFC De La Rosa

VAX—generated Graphics

DATABASE GRAPHICS

- TWO PROGRAMS PLOT BATTLEFIELD "SNAPSHOTS" AND DIRECT FIRE INTENSITY
- TAB _ DESCRIBES "VTCMIF", THE PROGRAM WHICH PROVIDES BATTLEFIELD "SNAPSHOTS"
- THE PROGRAM "DBBIP" PROVIDES DIRECT FIRE INTENSITY AND IS DESCRIBED IN HELP FILE "DBBIP.HLP"
- USEFUL TO HAVE EXTRACTS OF TABLES ON HAND BEFORE RUNNING GRAPICS (FET,CMT)

BATTLEFIELD GRAPHICS

To invoke program ...

$ VTCMIF <cr>

or if that doesn't work try

$ run DUA1:[BDMDMS]VTCMIF <cr>

USER DOCUMENTATION FOR VTCMIF.EXE

by Jack D. Baldwin and Saleem Nicola

The EDM Corporation

USER DOCUMENTATION FOR VTCMIF.EXE

This file contains instructions for use of the VTCMIF program. VTCMIF may be used to view graphical representations of the contents of five tables in NTC mission databases: The Indirect Fire Missions Fired (IFMF) table, the Control Measure Table (CMT), the Control Measure Add table (CMA), the Ground Player Location Table (GPLT) and the Air Player Location Table (APLT). The user may set the retrieve specifications for each of these tables, examine the resulting graph, and decide whether to plot the graphics on hard copy.

The program is divided into four sections:

1) the Overviews and Zoom-in coordinate selection
2) the Indirect Fire plots
3) the Control Measure plots
4) the Player plots

The first section (overviews) allows the user to examine a graph of the entire NTC and all the control measures and fire missions. From the overview, he may determine the most ideal coordinates to "zoom in" on for the best graphical representation of the intended data. After a set of zoom-in coordinates have been selected, he may plot out particular indirect fire missions (second section) on the zoom-in grid, and opt to plot as many as he likes on hard copy. Next, he may do the same with control measures (third section), and then with players (fourth section). He may skip any section he chooses.

Note finally that the program is intended for generating supporting graphics for reports, and not as a tool for exploring the data. Therefore, it is imperative that the user be familiar with the mission before he uses the program, so that he knows approximately what he will see, as well as where on the map and when relative to the battle he will see it. Thus, while running the program, it is extremely helpful to have on hand printouts (in any sorted order that may be useful) of all or some of the five tables listed above.

To run the program, enter the proper command (defined elsewhere). Note that because of the graphics, the program must be run on a terminal with the capability of interpreting REGIS graphics commands (a VT125, or other compatible terminal). Following is an explanation of the meaning of all prompts the program will ask:

Section 1 -- Overviews

1. Enter database name:

Type the name of the NTC mission database in which the desired data is located.

2. Control Measure Overview
B force, O force, W force, or Continue?

The Control Measure Overview plots out all the control measures in the Control Measure Table. You may then (after you have exited the Overviews section) "zoom in" on a particular set of coordinates and specify which control measures you wish to see. Note that the overview does not display control measures from the Control Measure Add Table. If you wish to skip the Overview, enter C (for Continue) and go on to step 3 below.

If you wish to see the Overview, enter a force (B=Blueforce, O=Opforce, or W=White players). A grid encompassing all of the NTC will be displayed, and the control measures will be drawn to scale on the grid.

The control measures are sorted by purpose; hit return after all the control measures of one purpose are displayed, or type X (and return) to prematurely exit the overview.

3. Indirect Fire Overview
Overview or Continue?

The Indirect Fire Overview plots a small circle for each blue fire mission where it occured, from the beginning of the segment to the end. From the resulting graph, one may determine the best zoom-in coordinates for viewing indirect fire.

4. Enter min X value (as 99):

Once you have exited the Overviews, you may "zoom in" on a particular set of coordinates. The zoom-in may be done only once; only one set of coordinates may be specified per run of the program. The "min X value" is the leftmost (or Eastmost) X coordinate that will be displayed on the zoom-in grid. The value is the first two digits of a five-digit coordinate (i.e. the "23" of "23000"). The rightmost (or Westmost) coordinate will be eighteen plus the value you enter.

5. Enter min Y value (as 99):

The "min Y value" is the bottommost (or Southmost) Y coordinate that will be displayed on the zoom-in grid. Note that the Y coordinates at the NTC run (from South to North) from 87 to 99 and then from 0 to 31. The topmost (or Northmost) Y coordinate will be ten plus the value you enter (eleven plus the value you enter on the hardcopy printout).

6. Enter hardcopy plot scaling factor:

The scaling factor you enter tells the computer how big to make your graph when it is sent to the printer. Enter the value as a decimal number (i.e. 1.0 or .5, etc.). 1.0 will make the graph two printer pages long; you may not enter a higher value than 1.0. .5 will make the graph a quarter as big (half as big in the X direction and half as big in the Y direction).

Section 2 -- Indirect Fire Plots

7. Skip Indirect Fire Plots? (Y/N)

Enter Y to skip the indirect fire section (that is, continue with prompt #15).

8-12. Enter Nth ring radius (in meters):

These five prompts ask for the five range bands to be blotted. Five rings, each of the radius you enter, will be plotted around each fire mission you select (see prompt 9, below). To eliminate a ring, enter 0. These prompts may be answered only once; i.e., all fire missions plotted must have the same size rings around them.

13. Fire mission number:

The number of the indirect fire mission, as referenced by the IFMF table. Once the mission rings have been plotted, you will be asked whether or not to plot them to hard copy.

14. Do another fire mission? (Y/N)

Enter Y to draw another fire mission (that is, go back to prompt 13). If you enter N, you will be asked prompt 15.

Section 3 -- Control Measure Plots

The following prompts (15 through 18) ask you to specify which control measures to graph, and may be entered more than once.

15. Enter force code (B or O):

Each control measure is associated with one of the forces; B=Blueforce, O=Opforce, or W=White players. You may enter an asterisk (*) to view the control measures of all three forces.

16. Enter table name (CMT or CMA):

If you wish to view control measures from the Control Measure Table, enter CMT. If you wish to view control measures from the Control Measure Add table, enter CMA. (The CMT contains control measures initialized before the mission began. The CMA contains control measures added during the course of the mission.)

17. Enter Control Measure type (P,L,A):

A control measure is either a point (P), a line (L), or an area (A). Enter the appropriate letter, or an asterisk (*) to view all types of control measures.

18. Enter Control Measure purpose:

Type the control measure purpose, or enter an asterisk (*) to view control measures corresponding to all purposes. A listing of the Control Measure Table for your database (see above) is helpful in specifying control measure purposes. Each control measure corresponding to the specifications you gave the computer in prompts 11 through 14 will now be displayed on a grid. After each control measure is displayed, the computer will ask

Plot it? (Y/N)

If you enter Y, the control measure will be placed on the grid to be sent to the line printer. Sometimes, a control measure will not appear on the grid on the screen, which generally means it will not be displayed on the printed graph.

Once all control measures corresponding to your specifications have been plotted, the computer will ask

More control measures? (Y/N):

If you enter y, the computer will start with prompt #15 again. If not, the computer will continue with prompt 19.

Section 4 -- Player Plots

19. Players

```
A: Plot dead and live players
L: Plot live players only
D: Plot dead players only
K: Plot players where they were killed
N: Plot no players
Enter player plot option:
```

This prompt asks for the type of player plot you wish to make, and are self explanatory. Entering any of the letters, except N, will cause the computer to continue with prompt 20. N cause it to will skip to prompt 24. After players have been plotted, this prompt will be displayed again.

20. Player Force code (B or O):

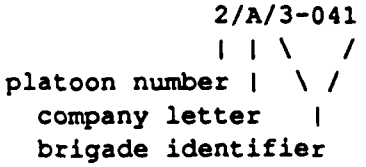
Type the force code of the players you wish plotted (B=Blueforce, O=Opforce, W=White players, or *=all players).

21. Enter table name (APLT or GPLT):

Each mission database contains two position/location tables: the Air Position/Location Table (APLT) and the Ground Position/Location Table (GPLT). The GPLT contains most of the position/location data for ground players. The APLT contains position/location data for all instrumented air players, as well as some ground players. For instance, most position/location data for Bradleys is stored in the APLT; the reasons for this involve the technical aspects of the storage of the NTC digital data.

22. Echelon identifier (i.e. A/3-041):

You will be prompted for the echelon identifier only if you selected the GPLT in prompt #21. Type the echelon name of the players you wish plotted. Echelon names are organized as follows:



To plot all the players in the force you specified, enter an asterisk (*). To plot all the players in a particular platoon, enter the entire echelon identifier as described above (i.e. 2/A/3-041). To plot all the players in a particular company, enter only the company and brigade names (i.e. A/3-041). To plot all the players in a particular brigade, enter only the brigade identifier (i.e. 3-041).

22. Enter player LPN:

You will be prompted for the player Logical Player Number (LPN) only if you selected the APLT in prompt #21. The Logical Player Number of a player is an arbitrary number assigned to a player at the start of each mission. A list of player names and corresponding LPNs is found in the Player State Initialization Table (PSIT) for each mission. By first using Ingres to find out which players are logged in the APLT, you can specify the number of an APLT player via this prompt. (If there is more than one player in the APLT which you wish to plot, either enter a * here or cycle through the prompts, entering a new LPN at each cycle.)

23. Time to plot (HH:MM:):

Enter the time at which you wish the position/location to be reported. The format is HH:MM. (If you are plotting players where they were killed, the prompt will be

End time (HH:MM):

The end time is the time at which to stop plotting killed players.

The players will now be plotted on the screen and on the printed graph. You will then be asked

Plot these players to hard copy?

If you enter Y, the computer will plot the players you see on the terminal to the hard copy plot. Then, prompt 19 will be displayed again.

24. Plot contours on hard copy? (Y/N)

If you enter Y, the computer will plot contour lines on your graph. A contour line is drawn at every 50 meter increase in elevation. Plotting contour lines takes a while, so it is advisable to answer Y to this question only when you think the plot you made is nearly perfect.

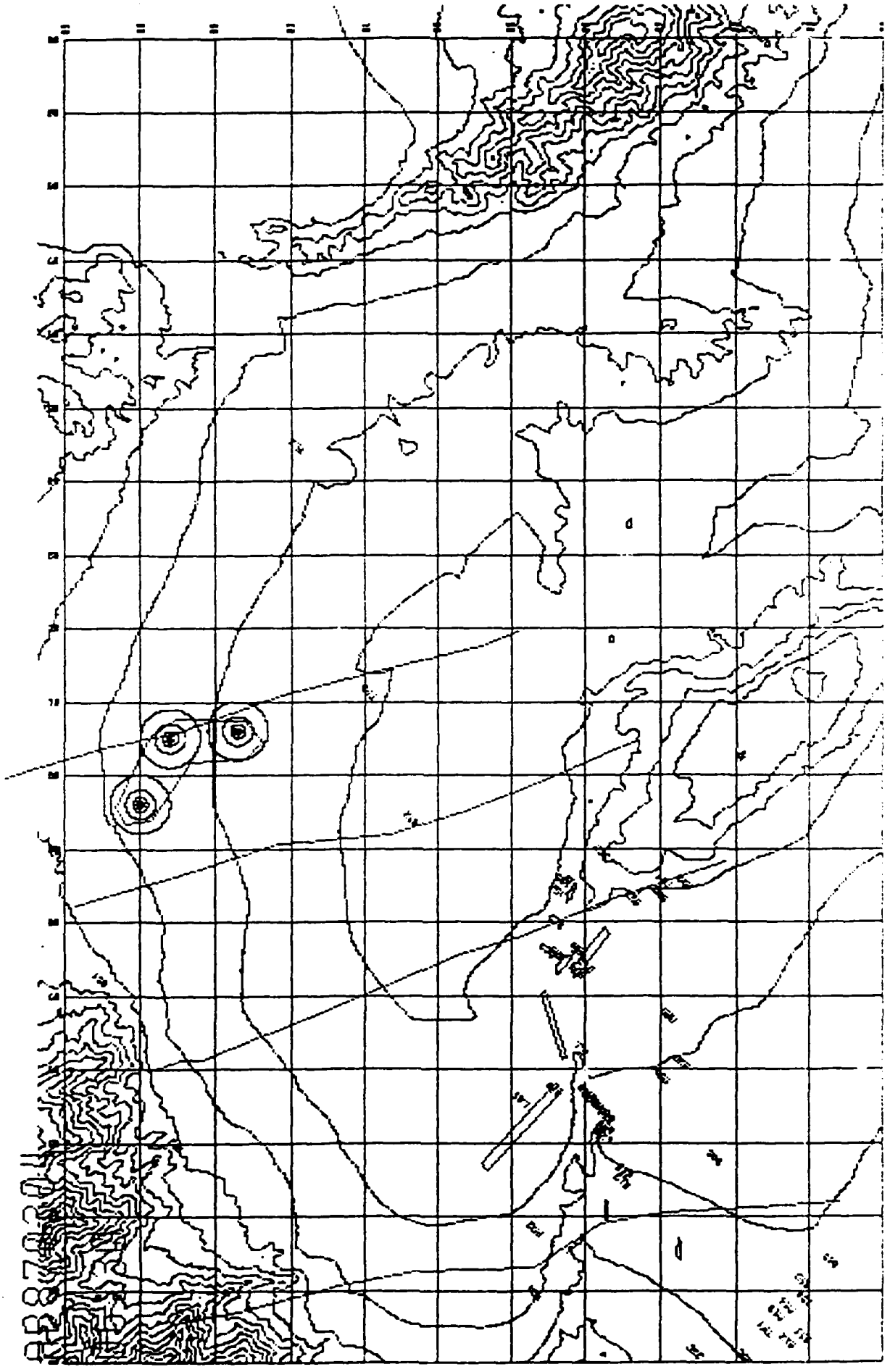
Once the program has finished and you are back at the $ prompt, you must run a post processor to finalize your harcopy plot. To do this, enter

PLXY

At the PLT> prompt hit return. Post processing will begin, and will take a few minutes. Once the PLT> prompt comes back, enter EXIT (all capital letters). At the $ prompt, enter

PRINT PLTDAT.PLT/NOFEED

The /NOFEED qualifier is VERY IMPORTANT! A graph of all control measures and players you wished plotted will be sent to the printer.



BATTLEFIELD INTENSITY PROFILE

To invoke program ...

& DBBIP <cr>

or if that doesn't work try

$ run DUA1:[BDMDMS]DBBIP <cr>

General: This file contains instructions for the use of program DBBIP. This program is designed to graphically display the intensity of a force-on-force simulation conducted at the National Training Center. The information displayed comes from the Fire Event Table (FET), the Pairing Event Tabale (PET) and if the data is available, the Indirect Fire Target Location (IFTL) table. The sample output provided with these instructions detail where and how these data are used.

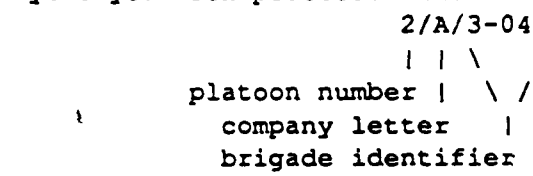
Operating Instructions
---

1. Enter database name:

Type the name of the NTC mission database (in UPPER case letters) in which the desired data is located.

2. Echelon identifier (i.e. A/3-041):

You will be prompted for the echelon identifier. Type the echelon name of the players you wish plotted. Echelon names are organized as follows:



To plot all the players in the force you specified, just press enter with no other inputs. To plot all the players in a particular platoon, enter the entire echelon identifier as described above (i.e. 2/A/3-041). To plot all the players in a particular company, enter only the company and brigade names (i.e. A/3-041). To plot all the players in a particular brigade, enter only the brigade identifier (i.e. 3-041).

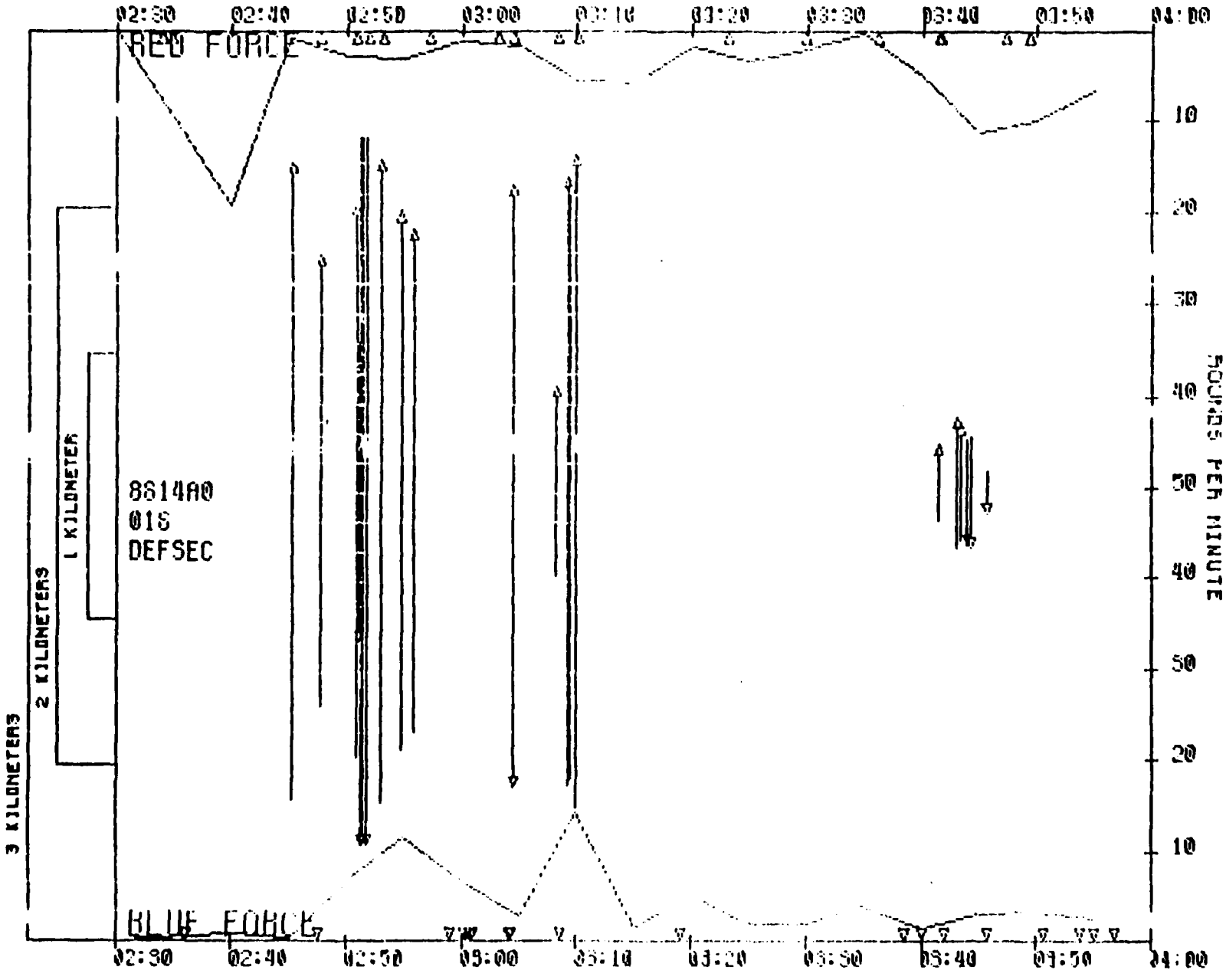
Once the program has finished and you are back at the $ prompt, you must run a post processor to finalize your harcopy plot. To do this, enter

PLXY

At the PLT> prompt, enter the name of the database. Post processing will begin, and will take a few minutes. Once the PLT> prompt comes back, enter EXIT (all capital letters). At the $ prompt, enter

PRINT 'database'.PLT/NOFEED

where 'database' is the name you input into the program when you first began. The /NOFEED qualifier is VERY IMPORTANT! A graph of the battlefield intensity profile will be printed at the lineprinter.


02:30
02:40
02:50
03:00
03:10
03:20
03:30
03:40
03:50
04:00
RED FORCE
BLUE FORCE
8814A0
01S
DEFSEC
1 KILOMETER
2 KILOMETERS
3 KILOMETERS
10
20
30
40
50
40
20
10
SOUNDS PER MINUTE

ARI-NTC ARCHIVE AND RESEARCH CENTER WORKSHOP
EVALUATION INSTRUMENT
April 1989

NAME: _____

1. Which three agencies need to review analysis products from the ARI-NTC archive prior to dissemination?

2. Which agency does a potential user contact for data access to the ARI-NTC archive?

3. What restrictions apply to use of unit identification in the reporting of research findings from the ARI-NTC archive?

4. Indicate two aspects of data available from the commo tape data source which are unique.

5. Give three limitations of Take Home Package data.

6. What kinds of battle statistics are available in the Take Home Packages?

7. What kinds of information are contained in the Engagement Simulation Summaries?

8. Which three sections in the Take Home Package contain narrative information and/or statistics which can be useful for analysis?

9. Give two attributes of AAR tapes that make them valuable as supplementary data sources?

10. List three limitations to using AAR tapes for research?

Laboratory Section

YOUR ASSIGNED DATABASE NAME:_____

To log on the VAX computer, use the assigned user id for both your Username and Password. Use a VT220 terminal if available.

A. Press the RETURN key, at the prompt enter your Username and press the RETURN key

B. At the prompt enter your password (the characters will not show) and return. A $ will now appear on the screen, this is the computer's command line.

11. What type of mission is your database? (circle correct answer)

D ATK
H ATK
C ATK
DEF BP
DEF SEC
MTC
RECON

At the $ type **printr aridms mission >lpa0:** then press the return(RET) key. (That's a zero followed by a colon.) The mission type will be listed on the output found in the printer room.

12. How many rows are in the PET table? (See example 4.1 in the *Guide*)

_____

To answer 12 and the remaining questions refer to the *Guide to Using the ARI-NTC Research Database* in the Workbook and do the following:

A. At the $ type **IQUEL DATABASE** where DATABASE is the one assigned to you and press the return(RET) key.

B. Press the PF1 key to get to the command line.

NOTE: To see all options the PF1 key may have to be pressed one or more times. The options we are interested in are GO, COMPLETE, and FILE. GO and COMPLETE send the command file on the screen to the computer for execution. FILE displays a submenu to READ or WRITE a file from the computer disk to the screen or vice versa, and gives a prompt to enter the file name.

C. Now type **F** and RET.
D. Now type **R** and RET.
F. Now type **example.1** and RET.
F. In order to execute this command file press the PF1 key and type **G** OR **C** and RET.

Note: In order to look at the complete report use the NEXT SCREEN or PREV SCREEN keys. When finished with the report press the PF3 key.

G. Now press the PF1 key and type **B** and RET. This clears the IQUEL (Interactive QUEry Language) screen so you can proceed with the next question.
H. Now repeat steps C thru G for questions 13 thru 15.

13. How many of those rows in the PET table are matched pairs? (See example 4.5. **F R example.5**)

_____

14. How many indirect fire casualties for this mission? (See example 4.6. **F R example.6**)

_____

15. What is the longest range (hit, kill or near miss) for a 105mm tank for this mission? (See example 4.8. **F R example.8**)

_____

16. Use the report writer to create output from your data base and also AA870209 and AA870419. Create a single file for use with the SPSSX example.

Question 16 may be solved in a number of ways, two will be shown.

First the problem can be do be done as follows (See page 12 of the*Guide*):

A. Press the PF3 key until the **$** prompt shows on the screen.

B. Type **sreport dbname example.8b** RET. Dbname is one of the three databases.

C. At the **$** prompt type **report dbname range** RET. Dbname is the same.

D. Repeat steps B and C for the other two databases.

E. At the $ prompt type **copy range.dat;* allrange.dat** RET

F. At the $ prompt type **sort/key = (position:2,size:4) allrange.dat** RET. Next, at the prompt type **allrange.srt**

G. At the $ prompt type **edit allrange.srt** RET. At the * type **change** or **c** RET. The screen appears blank. Remove these blank lines individually by repeatedly pressing the PF4 key until the data show at the top line of the screen. (Information on the VAX screen editor commands are on page two of the SPSSX section of the workbook)

H. To exit the editor now press the ctrl key and the z key at the same time. At the * type **exit** or **ex** RET. Your data file name is allrange.srt;2 and you are now ready to do question 17.

A second way to do this problem is to:

A. Create a file with the editor that has the names of your databases using a line for each database. The file must be named TEST.LIS. The editor steps are:

1. At the $ prompt type **ed test.lis** RET.
2. At the * prompt type **change** or **c** RET.
3. Now type the three database names with a RET after each database.
4. Now press the CTRL key and the Z key at the same time.
5. At the * type **exit** RET and the file is now built.

B. At the $ enter **@dua1:[INGRES.TOOLS]REPORT_LOOP** RET. There are two prompts answer them with **EXAMPLE.8B** RET and **test.lis** ret.

C. At the $ prompt enter **dir** RET. Your file name is output.rpt and you are ready to do question 17 after changing output.rpt to allrange.srt by typing:

rename output.rpt allrange.srt RET

17. Produce statistics from the file generated above using an SPSSX job named example9.sps by entering at the $ prompt:

spssx example9.sps (adding **/output=LPA0:** if you want a printed copy).

What is the median engagement range in your data? _____

ARI-NTC ARCHIVE AND RESEARCH CENTER WORKSHOPS

FOCUS	DATES	PARTICIPANTS
Prototype	08-12 Feb 88	15
Infantry	14-18 Mar 88	17
Armor	04-08 Apr 88	14
Engineer	11-15 Apr 88	10
Field Artillery	25-29 Apr 88	11
Intelligence	09-13 May 88	14
Researcher	17-18 May 88	17
Air Defense/Aviation	23-27 May 88	14
CSS/Signal	31 May - 03 Jun 88	15
Quarterly	22-26 Aug 88	18
Quarterly	14-18 Nov 88	21
Quarterly	17-27 Jan 89	44
Quarterly	24 -28 Apr 89	27
Quarterly	17-28 Jul 89	39

CG TRADOC Directed Warfighters' Seminars

Fort Leavenworth	14-16 Jun 88
Carlisle Barracks	17-19 May 89